April 1984
Vol. 10, No. 4
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NEW EDUCATIONAL SOFTWARE

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Preview Of Macintosh

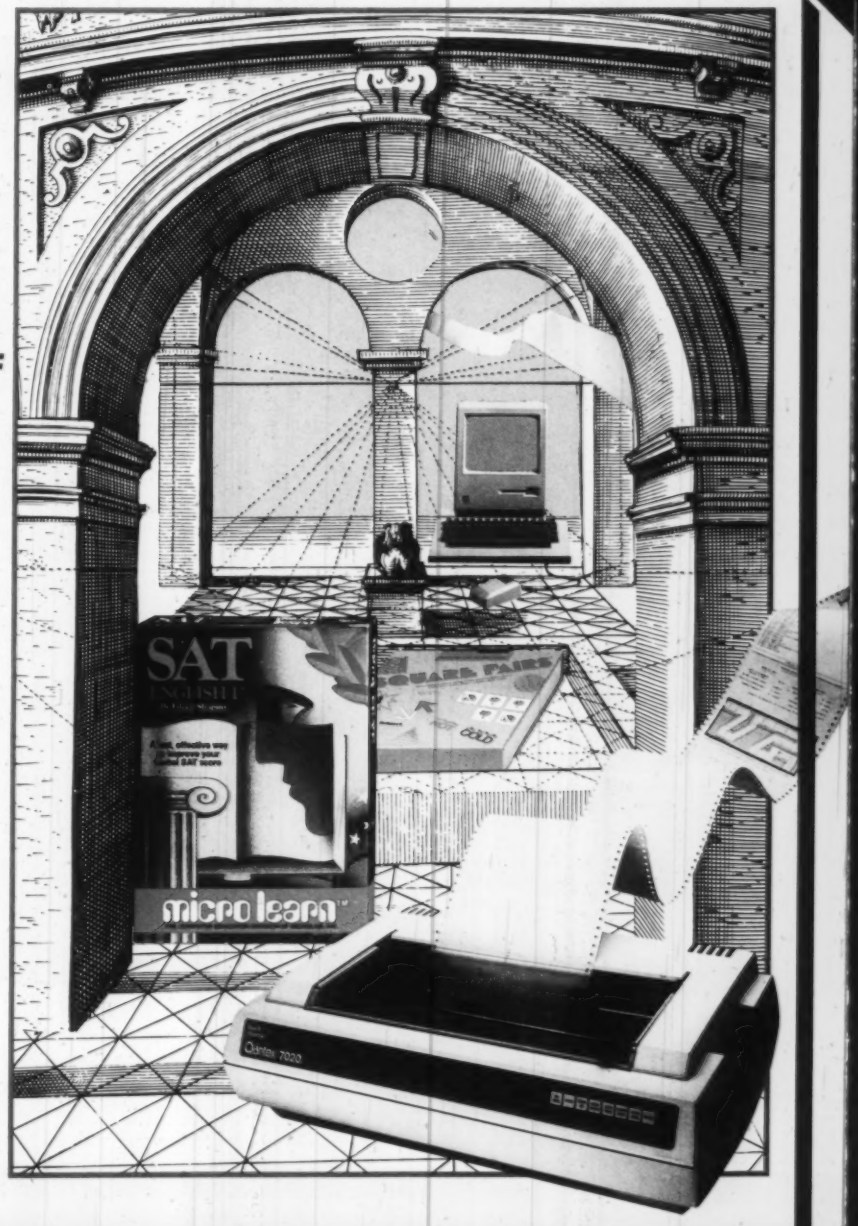
New Products From The Consumer Electronics Show

The CBasic Clinic

New Column On Business Computing

In-Depth Evaluations:

- **Actrix Computer**
- **Hewlett Packard 150**
- **Coleco Adam**
- **Qantex 7020**
- **Microline 92**
- **SAT Preparation Packages**
- **Programs For Preschoolers**
- **Spectrum Science Courses**
- **High School Math Packages**
- **Educational (?) Quiz Games**
- **Movie Maker**
- **7 Apple Games**



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In a nutshell, Leading Edge® is big word processing for the small computer.

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CHANGE A FORMAT IN SECONDS
Without leaving page or letter or memo or other document you're working on, you can see how it would look with different margins, indented, or in all capital letters; or with boldface headings, etc.

BLOCK INDENT
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Just highlight the document you want (using the cursor keys), and you'll get it, simply by hitting the execute key.

HOT PRINT
Print any portion of a document, from one line to an entire document.

DOT LEADER TAB
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Corrects the most common mistake in typing: One stroke turns "teh" into "the."

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THINGS THAT MAKE IT EASY

ONE-KEY INSERT AND DELETE
Lets you do word processing's two most common functions the simplest possible way.

MARGIN AND TAB SETTINGS AS EASY AS ON A TYPEWRITER
No other word-processing system of any size makes it this easy. You can even adjust both left and right margins on-screen.

THE SCREEN SHOWS YOU WHAT YOU'RE GETTING
You don't have to wait until it's printed. You see margins, line breaks, underlines, page breaks, etc., as they will appear.

JUSTIFIED, OR RAGGED-RIGHT
And see it on the screen the way it'll appear when it's printed.

ANY NUMBER OF FORMATS IN A SINGLE DOCUMENT
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You don't have to print a whole document. Just punch in the page number.

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Lets you tell the system where you want pages to break.

HARD AND SOFT SPACES AND HYPHENS
You can tell the program which words must go together on the same line, which words must be hyphenated.

WIDOWS AND ORPHANS
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TEXT THAT'S WIDER THAN THE SCREEN
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THINGS THAT MAKE IT PROFESSIONAL

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ONE-KEY CENTERING
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THE BEST UNDERLINE YOU CAN BUY
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SPLIT SCREEN/WINDOWS
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BOLD, SUBSCRIPTS, SUPERSCRIPTS, STRIKETHRU, AND LETTERS DOUBLE-WIDE
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AUTOMATIC DOCUMENT BACKUP
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RECALL OF DELETED TEXT
If you delete text by accident or change your mind, you can get it back.

CUSTOMER PROTECTION PLAN
Your Leading Edge Word Processing is guaranteed forever. If you should accidentally destroy it, we'll replace it at a nominal cost. Whenever we upgrade it, we'll give you an updated program at a nominal cost.

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CIRCLE 163 ON READER SERVICE CARD

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It lets you do all this on an IBM® PC on a single 5¼" disk. Add a hard disk, and it can contain up to two file-cabinet drawersful of information, each drawer containing up to 32 file folders, each folder containing up to 32 pieces of electronic "paper" containing anything from a single sentence to a thousand page book.

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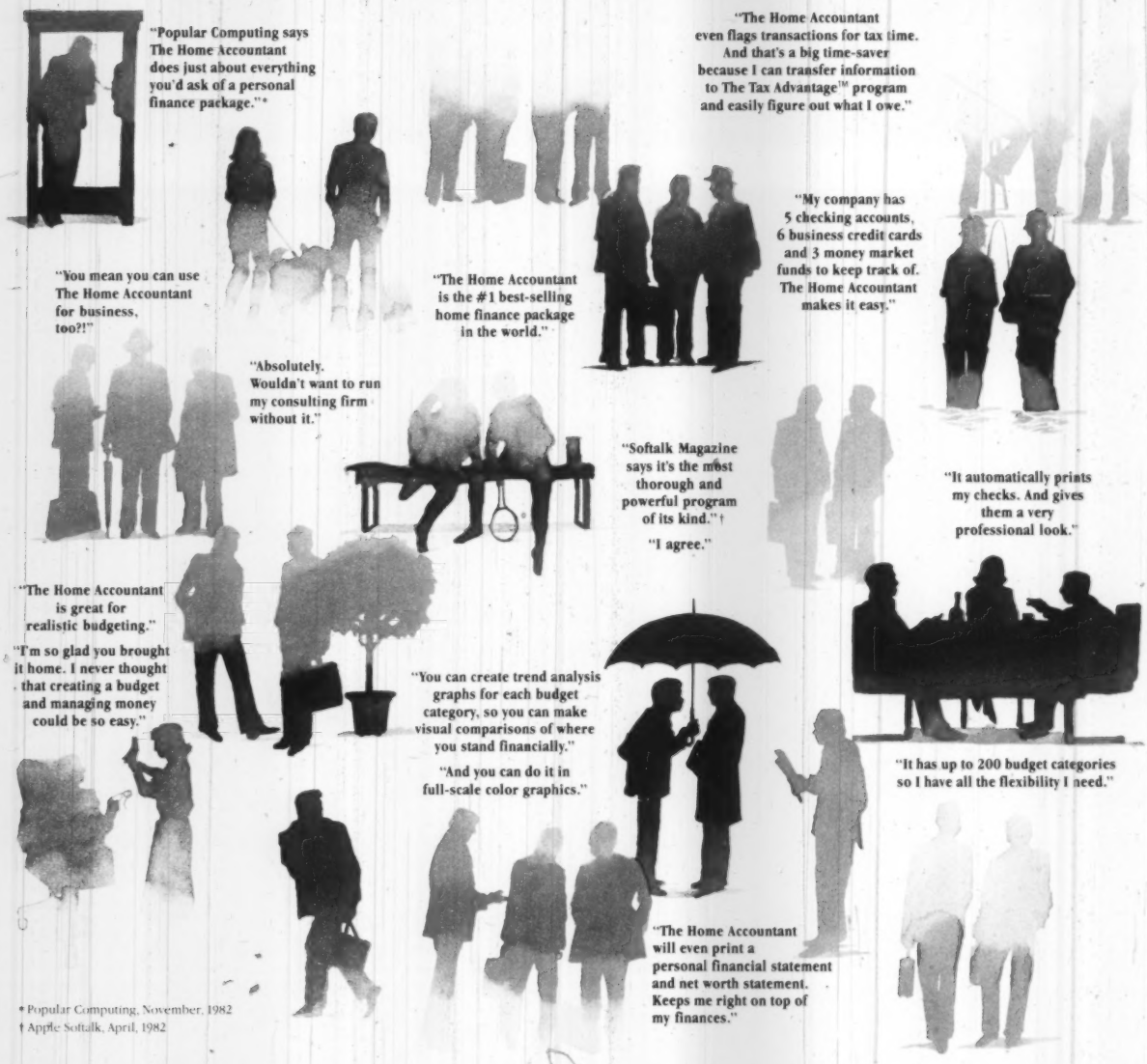
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*Popular Computing, November, 1982
†Apple Softalk, April, 1982

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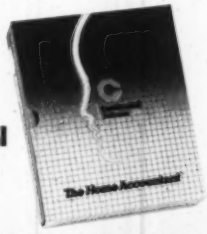

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CIRCLE 122 ON READER SERVICE CARD

In This Issue

Evaluations & Profiles

12 **Actrix Computer** ..... *Ahl*
A compact portable with printer and modem

26 **Hewlett Packard 150** ..... *Talmy*
Compact system features touch screen and graphics

38 **Macintosh Preview** ..... *Anderson*
A short profile to whet your appetite

45 **Coleco's Adam** ..... *Gray*
Four machines in one

59 **Education Or Entertainment?** ..... *Staples*
Are quiz games really educational?

64 **Growing Up Literate** ..... *Staples*
Programs for preschoolers

81 **Spectrum Science Courses** ..... *Ahl*
Programs teach about tracks, coins, and dinosaurs

85 **Math In The Classroom** ..... *Geist & Geist*
Programs to teach high school mathematics

101 **Preparing For The SAT** ..... *Linzmayer*
Improving your scores by computer

108 **Movie Maker** ..... *Anderson*
Superb graphics and animation for Atari

116 **Something For Everyone** ..... *Arrants*
Seven deliciously different Apple games

128 **Your Computer Bookshelf** ..... *Ahl*
Personal recommendations

Articles

132 **The Winter Consumer Electronics Show** ..... *Ahl*
Scores of new products from all over

154 **Getting Educated At CES** ..... *Staples*
The latest in educational software

164 **Digicon '83** ..... *Lehrman*
High tech musicians unite

180 **The CBasic Clinic** ..... *Libertine*
Part 6: Recapitulation and wrapup

Departments

6 **Input/Output** ..... *Readers*

8 **Notices** ..... *Fee*

10 **Street Price Index** ..... *Ahl*
Who's selling what for how much?

190 **Print About Printers** ..... *Anderson*
The Qantex 7020 and Microline 92 in depth

196 **Telecommunications Talk** ..... *Murphy*
Profile of CompuServe

204 **Notebook/Portable Computing** ..... *Ahl*
Software and peripherals for notebooks

208 **Let's Talk Business** ..... *Blanchard*
A new column on business computing

212 **Logo Type** ..... *Bearden*
Simulating a Fill command

214 **Commodore's Port** ..... *Anderson*
Dozens of new products for the 64

222 **Apple Cart** ..... *Arrants*
A 68000 development system and graphics software

227 **TRS-80 Strings** ..... *Gray*
Tandy 2000, color mouse, and more

232 **Inside Dreck** ..... *Qwerty*
A boldfaced look at The Industry

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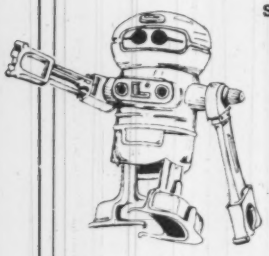

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CIRCLE 181 ON READER SERVICE CARD

Input/Output

Help For Zork Sufferers

Dear Editor:

The response to my article on *Zork III* in your November, 1983 issue has been overwhelming. I have not been able to respond to letters, but I would like to offer some suggestions to readers who have become lost in the cave.

The user group mentioned in the article is no longer in existence. Infocom, however, has just announced they have begun to sell the dungeon maps and *InvisiClues* books that should be similar to those originally sold by the user group. They can be ordered on a charge card using the number (800) 526-0359, extension 41 (on orders less than $40 there is a $2 surcharge). Hint books are $7.95.

Another alternative in getting hints is to use The Source or CompuServe. Many friendly veteran adventurers monitor the bulletin boards and can offer help and advice for lost adventurers.

Carl Townsend
4110 N. E. Alameda
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Sprite Fix

Dear Editor:

A number of readers have written to me about problems encountered while entering my Sprite Maker program in September's issue. Two errors in the listing have come to my attention. Lines 50 and 60 should read:

```
50 PRINT "(clear)";
60 PRINT"(CMDR)(A)";:FORI=1 TO 24:PRINT"(shift)(-)";:
NEXT:PRINT"(CMDR)(X)"
```

While most people caught the error in line 60 because it generated a syntax error, the omitted semicolon in line 50 was a little more subtle and caused the sprite image field to be printed one line too low on the screen. While the program still works it may be confusing to the user.

Many people have asked about the ^ symbol in the listing. This is the up arrow, the symbol for exponentiation on the Commodore 64.

John Michael Lane
260 Main St.
Winthrop, MA 02152

Defining Creativity

Dear Editor:

We would like to take this opportunity to comment on Eugene Raudsepp's articles, "Profile of the Creative Individual" (*Creative Computing*, August and October 1983) to provide interested readers with a slightly different perspective on creative people, the topic area of creativity, and psychology in general.

In our judgment creativity can be discussed only when it has been given some type of clear, operational definition. From our perspective, creativity is best defined as a social judgment made by a culture long after a discovery has actually taken place. If a product, idea, or invention is novel, useful, and relevant to important social concepts, there is a high degree of probability that it and its producer will be labeled, after the fact, as creative.

We remain unconvinced that an attempt to imitate the personality of a creative person will lead one to become more creative than he was before. This is like saying that if you imitate the happy-go-lucky, outgoing behavior of a tennis professional, you will play better tennis. Perhaps a variety of personal traits are unrelated or, even worse, negatively related to creativity.

One of the greatest problems facing social scientists is to convince the general public that behavioral explanations are neither as simple nor as obvious as they may seem. If they were, we would hardly be facing the personal and social problems we now have to deal with.

If you want to be "creative," whatever that means, do the following. First select an area of interest which is socially important and study it in depth. This will allow you to learn the necessary content and skills for producing objects in a particular field. Second, select problems that are judged to be culturally relevant and of high interest to you. Intrinsic motivation, which keeps a person working on a specific problem for a long time, is important. Third, adopt a problem-solving perspective in which you try to clearly define your goal state, the initial conditions, and all operations that seem to be essential for changing the initial conditions into the goal state. Fourth, control your environment to permit optimal working conditions (e.g. eliminate distractions, provide all necessary tools). Fifth, control and change your behavior so that it will complement your work goals. Any good behavior modification book will be of considerable assistance here. In all these five stages it is important to be specific, organized, and complete in your detailed examination.

We believe that the vast majority of creative people did not get that way because they were constantly thinking about creativity or worrying about whether they could imitate the characteristics of creativity. We suspect they got their label by being problem-centered, solving small and large problems, and finally solving the big one. Being a good problem solver is more reasonable, satisfying, rewarding, and productive than trying to build a creative personality.

James J. Forest, Ph.D.
Associate Professor of Psychology
Sherrie Lipson, B.A.
Graduate Student, Psychology
University of Manitoba
Winnipeg, Manitoba
Canada R3T 2N2

In rejecting Raudsepp's definition of the creative individual, you misunderstand his objective. And in thrusting the weight of judgment in terms of "cultural relevance" onto your own definition of the creative state, you unintentionally make his point rather than your own.

Raudsepp is not at all concerned with the critical eye of history when he discusses individual creativity. Rather, he underscores that failure, as much as success, is an integral part of the process. Letting go of the "judicial censor" is extremely important to the creative state. He stresses freeing, *rather than girding, the mind to think creatively.*

Outside of the need for personal interest, we could not disagree more with your regimen for creativity. It reads to us like a recipe to stifle rather than foster it. Electroshock would probably work better.

If you play tennis, you know it is an intensely psychological game. If you can think more like a pro when you are on the court, you will play a better game.—JJA

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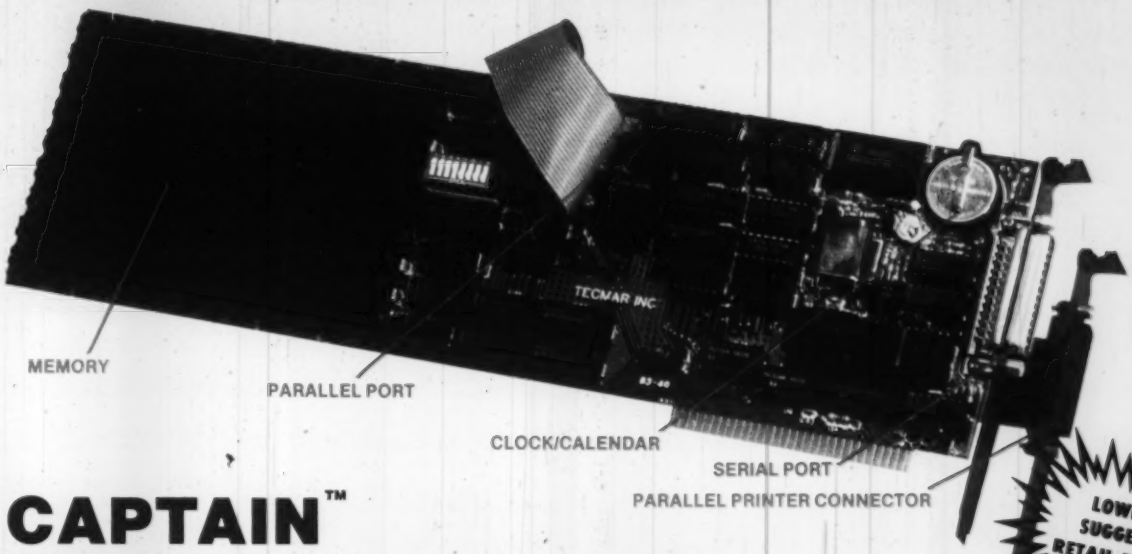

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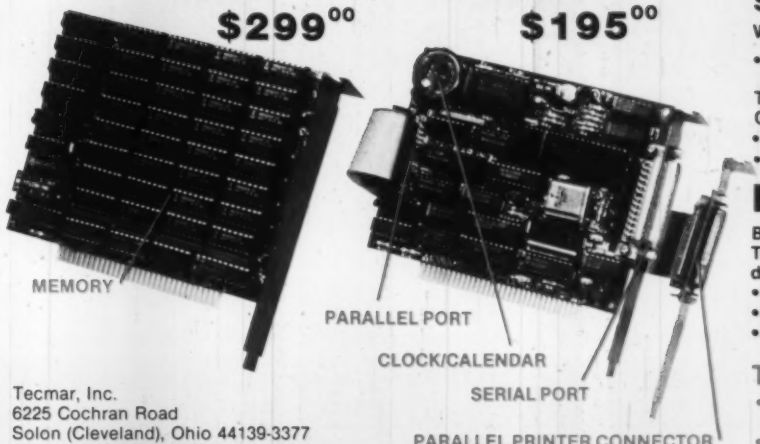

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CIRCLE 173 ON READER SERVICE CARD

Notices

Street Price Index Format Changed

In an effort to make the Street Price Index more useful, we are changing the format somewhat. From your feedback, it appears that you are most interested in the lowest price of a product, so we are dropping the high, average, month ago and year ago prices.

As a result, this will let us list many more items. In addition, we will be able to list new computers, peripherals, and software packages as they are released. We are also dropping the listing of dynamic memory chips, as this is mainly of interest to manufacturers and not to end users.

Also, the average price of a computer, printer, or peripheral was most valuable as a general indicator (or index) over time. Thus, we will keep track of it for articles on pricing trends, but we will not publish it each issue.

Some of the prices appearing in the revised Street Price Index were obtained with the cooperation of Computer Price Alert, a comparative pricing newsletter published 20 times per year. Comparative prices on about 300 items are listed in each issue including the names and addresses of the three vendors with the lowest prices on each item. A 12-issue trial subscription costs $36 from Computer Price Alert, P.O. Box 574, Cambridge, MA 02138, (617) 354-8116 or (800) 824-7888, op 71.

NASAGA Conference

The North American Simulation and Gaming Association (NASAGA) will hold its 23rd annual conference at The University of Iowa, Iowa City, Iowa, October 10-12, 1984. Presentations may be computer-based or non-computer-based. Participants represent a variety of fields typically including the health sciences, engineering, business, education, social work, urban planning, the military, and other areas.

For further information concerning the call for papers, write to: John McLure, N236 Lindquist Center, Division of Secondary Education, The University of Iowa, Iowa City, Iowa 52242. (319) 353-5681.

Personal Computer Userfest/Chicago

The Personal Computer Userfest/Chicago is a consolidation of two shows, Applefest for Apple Computer users and PC '83 for IBM PC owners. The Personal Computer Userfest will be held Thursday-Sunday May 3 to 6, 1984 at the O'Hare Exposition Center in Rosemont, IL.

The Userfest features Apple, IBM, and "work-alike" computers, compatibles, accessories, and software. The show includes over four hundred booths and is open to the public from 10:00 a.m. to 5:00 p.m. daily.

For more information call or write Northeast Expositions, 822 Boylston St., Chestnut Hill, MA 02167. (617) 739-2000.

Commodore Donation Programs

Commodore Business Machines has announced donation, grant, and information programs for schools and state departments of education.

One such program entitled CREWS (Commodore Resources in Education with States) targets the state departments of education. Selection of states is determined by the leadership role taken in assisting local school districts with training, software selection, and planning for uses of microcomputers in education.

Commodore has also developed Education Resource Centers at "Commodore-using" public and private schools and colleges linked with Commodore through a telecommunications network. Each Resource Center agrees to share software, curriculum and teaching strategy information with the others and the communities they serve. In return, Commodore provides each with a free VicModem and subscription to CompuServe as well as updated information, including hardware and software products, educational support materials, school computer events, resources for decision making, and technical assistance.

Where To Get CalcResult

In our review of *CalcResult* in the April 1984 issue of *Creative Computing*, we listed Computer Marketing Services as the distributor for the program. We have since learned that *CalcResult* is being marketed directly by the manufacturer, Handic Software, Inc., Fellowship Business Center, Fellowship Rd., B-206, Mt. Laurel, NJ 08054.

Computers And Children

The University of Delaware is sponsoring a national conference on "Computers and Young Children" on April 5-6, 1984.

The program is designed for teachers, administrators, and researchers in preschool and early childhood education. "Hands-on" workshops and speakers from the Children's Television Workshop and Apple Education Foundation are featured.

For further information, contact Dr. Richard B. Fischer, Division of Continuing Education, University of Delaware, Newark, DE 19716. (302) 451-1171.

Corrections

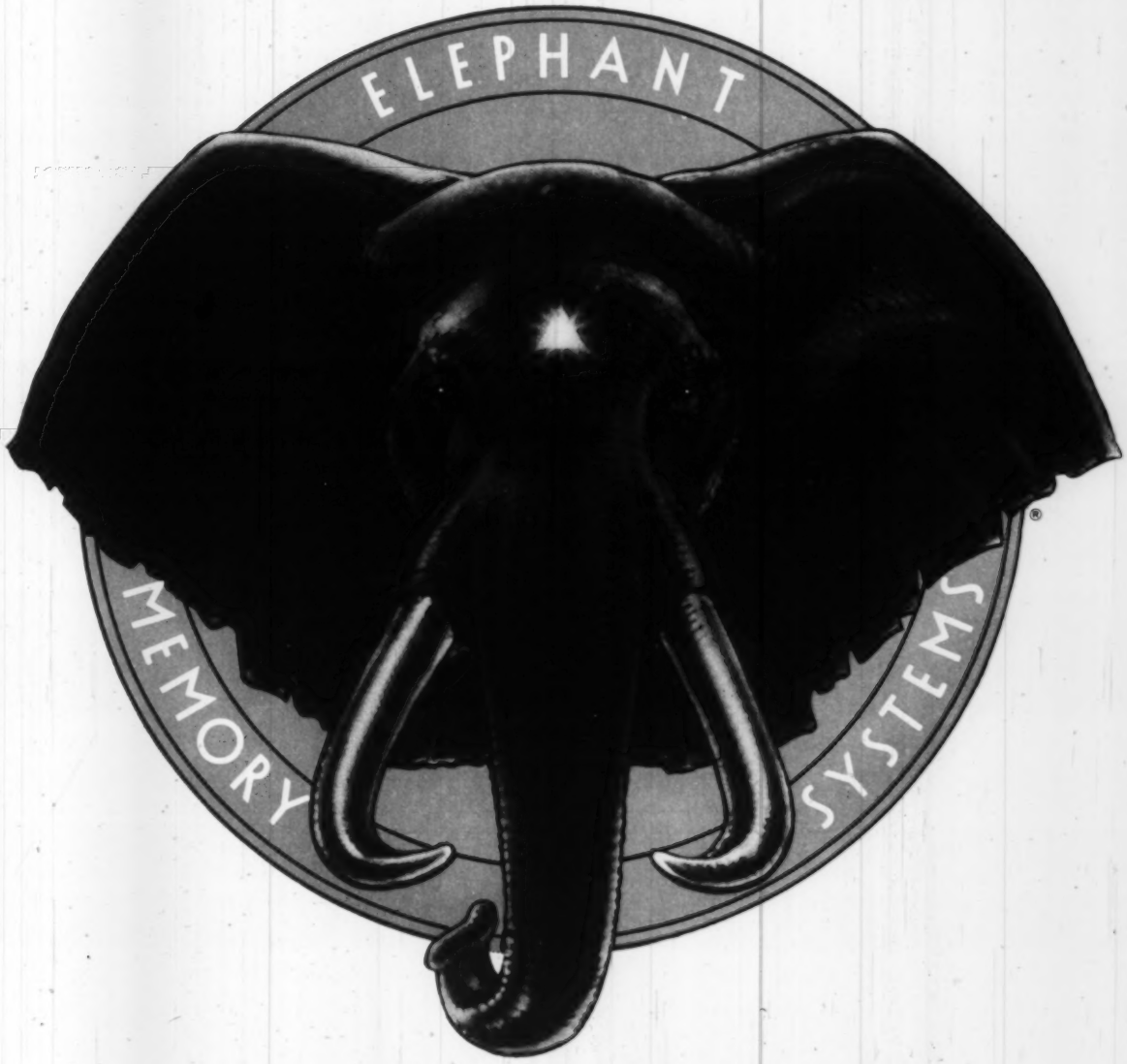
The address for Doublestuff Software on p. 102 of the February issue was incorrect. The correct address is: Doublestuff Software, 2053 W. 11th St., Brooklyn, NY 11223. (212) 237-2589 or (800) 221-9901.

Since our review of the Teleram T-3000 in January 1984, some changes have been made in price and product.

The system includes either CP/M-80 or UCSD-Pascal p-system, not Microsoft Basic. Teleram now includes teleText, a text editor which operates under CP/M. A battery operated 300 or 1200 baud Lexicon modem is optional.

The T-3000 now has a suggested price of $1595—$900 less than the price quoted in the review.

REMEMBER.



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CIRCLE 120 ON READER SERVICE CARD

Street Price Index

The Creative Computing Street Price Index is an on-going monitor of the prices of selected computers, peripherals, and software packages.

This Index is not meant to be a purchasing guide. We emphatically do not recommend that you purchase a product based on price alone. Equally important are customer service, delivery, warranty, return policy, and provision for maintenance.

Some of the prices in the Index were obtained with the cooperation of Computer Price Alert, a newsletter which lists comparative prices on 300 items per issue. Annual subscription price (20 issues) is $48 from Computer Price Alert, P.O. Box 574, Cambridge, MA 02138.

Computer	List	Feb. 1984 Lowest
Apple IIe (starter)	$1995	$1550
Atari 600 XL, 16K	199	149
Atari 800 XL	299	249
Commodore 64	595	179
Eagle PC-2, 128K, 2 dr	3495	2495
Franklin Ace 1200 OMS		1495
HP 150, 128K, 2 drives	3995	3295
IBM PC, 128K, 2 drives, green IBM monitor		2940
NEC 8201, 16K	795	599
Radio Shack:		
Color Comp, 16K, ext	199	149
Model 4, 64K, 2 dr.	1999	1549
Model 100, 24K	999	790
Timex 2068	199	139
Line Printer		
Anadex DP-9501	1725	1099
Diablo 630	2340	1699
Epson FX-80	699	519
Epson RX-80	595	269
IDS Prism	1499	1039
NEC 8023A	795	379
Okidata 82A	749	369
Okidata 92	699	449
Prowriter 8510P	695	339
Star Gemini 10	449	255

Monitor	List	Feb. 1984 Lowest
Amdek 310 amber	230	159
Amdek Color I	379	289
Amdek Color II	529	399
Princeton HX-12 RGB	695	475
Quadchrome 12" RGB	795	499
Taxan 12" amber	205	120
Zenith 123 12" green	150	89
Software		
Bank Street Writer	70	45
Condor 3	650	369
dBase II	700	379
Dow Jones Mkt Analyzer	350	245
EasyWriter II	350	179
Friday	295	179
Home*Accountant +	150	85
Lotus 1-2-3	495	299
Magic Window II	150	95
Multiplan	275	159
PFS:File	140	79
PFS:Graph	140	93
Perfect Writer	489	149
Screen Writer II	130	82
SuperCalc III	395	269
TK!Solver	299	179
VisiCalc Advanced	400	275
Volkswriter	195	99
WordStar	495	225
Zorks (any one)	50	26

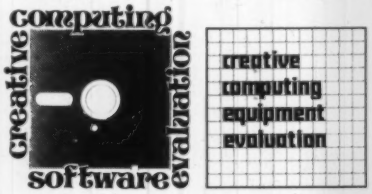
A Note To Our Readers

Product evaluations in *Creative Computing* are different from those in many other magazines. Here's why.

A *Creative Computing* product evaluation is objective, thorough, and in-depth. Normally, we get an actual production product for testing—on loan or purchased from the manufacturer. We do not ask for or accept any special treatment, but interact with the manufacturer as a normal customer would.

In most cases, we test the product in the environment and under the conditions in which we would expect it to be used. We do not believe that we should sit in an ivory tower and pass judgment on a product that is meant to be used by a salesman on the road or a child in a classroom.

When we evaluate a prototype, we state that fact in the review. Even so, we do not simply recite the manufacturer specifications; instead, we use the product, apply our own tests, and report on the results. If it lives up to the published specs, fine; if not, we tell you.



In our evaluations, we call a spade a spade and a lemon a lemon. Advertisers do not receive special treatment—no one does. Some manufacturers do not like this policy and refuse to work with us or advertise in the magazine. But most manufacturers welcome our policy of scrupulous honesty, and for that, we applaud them.

Nevertheless, we are not right all of the time. Sometimes, a unit might perform well in our tests, but be a dog for you. For that, we are sorry. But for the most part, we trust you will find our reviews—and the rest of the magazine—credible, honest, and interesting. BC

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before the written word, when people used pictures to communicate. Symbols representing entire ideas were easy to see and understand. And the people were comfortable with this language. And they were happy.

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CIRCLE 106 ON READER SERVICE CARD

With a built-in printer and modem, and impressive array of bundled software packages, the Access should find wide market acceptance.

creative computing equipment evaluation

The ~~Access~~ Actrix Computer

David H. Ahl

The Access computer was first shown at a trade show in the spring of 1983. However, because of problems with the corporate name and the name of the computer, the full-scale marketing of the unit was delayed until the fall. At the moment, the machine is still called the Access computer but the company name is now Actrix, a contraction of Access Matrix, the name that had to be abandoned. In time, the name of the computer will also be changed to Actrix.

The Access is interesting, one might even say, revolutionary. It is the first portable—well, transportable—computer with a built-in plain paper printer and telephone modem. As a result, it has very few competitors. Computer Devices' DOT computer has a built-in thermal printer, but it is a $3500 machine. The PC-5000 from Sharp has a built-in thermal printer which can be used with plain paper, and it has a modem that fits in the lid of the compact 13" x 12" x 3.4" case. Priced at more than $2750 with printer and modem, it is the only other machine in the same league as the Access.

The Access is based on the Z80A and has 64K of RAM, a 7" amber screen, a detachable keyboard, two double-density disk drives, an acoustic coupler and direct connect modem, and an 80-column dot matrix impact printer. It is bundled with an impressive array of software including CP/M 2.2, MBasic, CBasic, *Perfect Writer, Perfect Speller, Perfect Calc, Perfect Filer, Personal Pearl, Money Maestro,* and *Fancy Font.* At the base price of $2495, the Access is an excellent value.

creative computing

HARDWARE PROFILE

Name: Access

Type: Transportable business computer

CPU: 8-bit Z-80A

RAM: 64K

ROM: 4K

Keyboard: Detached, 75 keys

Text resolution: 80 x 25, amber display

Graphics and sound: None

Printer: Built-in Epson MX-80 FT

Disk Drives: Two double density 5¼"

Modem: Acoustic and direct coupled

Ports: Centronics parallel, two RS-232 serial, IEEE 488

Software: CP/M, MBasic, Perfect Writer, Perfect Calc, Perfect Filer, Fancy Font, Personal Pearl, Money Maestro

Documentation: User's Guide, Manuals with each applications software package

Price: $2495

Summary: Very compact with built-in printer and modem, and exceptional package of bundled software.

Manufacturer:
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Early Games feature multiple activities, easy to use picture menus, and colorful graphics. The games are fun, children love to play them! That's why they learn from them.

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counterpoint software inc.

Actrix, continued...

Functional, Yet Stylish

The Access is an all-in-one computer; buttoned up it measures just 16.3" x 11" x 10" (high). It has a fold-down handle on the top which can be used to cart it around, but at 33 pounds, you will not want to cart it far.

The case is constructed of black and beige plastic. Gussying up the black parts are stylish copper-colored trim strips which, unfortunately, begin to peel off at the slightest provocation.

The keyboard hinges on the front of the case, and can be removed if desired. In the detached mode of operation, the coiled cable stretches about two feet. When used on a desk top, the keyboard has two folding feet which elevate the back to give it a "normal" slant.

The main system unit also has a fold down stand which raises the front two inches and produces a ten-degree tilt for better viewing of the screen. The power cord fits into a recessed compartment on the rear of the unit.

The printer is in the top of the case. It is protected by a dust cover held on by two plastic fasteners. As the cover must be removed for paper loading, we found it was easier just to leave it off the computer except when carrying it from one place to another. (More about this later.)

The Keyboard

The Access has a full stroke keyboard divided into three sets of keys: a standard 51-key alphanumeric keyboard, a 15-key numeric keypad with several related symbols, and nine special function keys (not programmable functions).

The built-in function keys include ESCAPE, CONTROL, CONTROL LOCK, DELETE, ON/OFF LINE, CLEAR SCREEN, PAGE PRINT, TAB, and LINE FEED. A thoughtful touch is the pair of red LEDs that indicate whether CAPS or CONTROL LOCK is toggled on.

In addition to entering numbers, the numeric keypad keys double as cursor control and paper handling keys when CONTROL LOCK is depressed. The cursor movement keys can be used with the *Perfect Writer* and *Perfect Calc* software and, in local mode, with the screen editor. Curiously, they are not recognized by the other software packages such as MBasic, with which they would be extremely handy.

The keys are concave, contoured, and finished in beige and light gray with legends in maroon. The keys are generally in the "right" places, and the keyboard will not confuse touch typists. The keys have a good feel, and we had no trouble with keybounce at all.

Conspicuously missing from the keyboard are programmable function keys and any kind of BREAK or PAUSE key. Some of the software packages use control key combinations to achieve these functions, but in two instances we wound up pressing the system reset because we could not figure out how to halt a runaway program doing erroneous calculations. A BREAK or PAUSE key would have lowered our frustration level greatly.

Table 1. Benchmark tests of selected computers.

Computer	Time	Accuracy*
Sharp PC-5000	0:18	.005859375
Computer Devices DOT	0:22	.005859375
Access	1:02	.187805
Osborne 01	1:10	.187805
Kaypro II	1:36	.187805

* Lower is better

Amber Monochrome Display

The built-in display is a 7" amber unit with text resolution of 80 characters by 25 lines. Characters are printed in a 7 x 9 pixel block with full two-pixel descenders. The built-in character set includes the standard 96 ASCII characters (letters, numbers, and symbols) and, according to the manual, 126 graphics characters. This may be so—we have no reason to believe the manual is lying—but we were unable to obtain any of these characters from the keyboard or by using the CHR$ function in Basic. Nor is there any information in any of the manuals on how to access these graphics characters.

There are several programmable character attributes: inverse, blink, underline, double underline, and half intensity. These attributes can be set from Basic by using the CHR$ function, however, you are on your own to figure out what code sets which attribute; none of the manuals show any ASCII codes above decimal 127.

Experimenting with these codes adds elements of challenge and frustration to your programming. For example, running a program to print all of the ASCII characters between 33 and 255—something we do with every computer we evaluate—results in the entire screen flashing tiny A/K symbols. Moreover, there is absolutely no way to recover short of pressing the reset switch and reloading the entire system from scratch. Further experimentation revealed that the bad guys are CHR$(151) followed by CHR$(153); Access owners should avoid this combination unless they enjoy pressing the tiny, recessed reset switch on the front of the system unit.

We now know the meaning of most of the codes between 128 and 255, but it seems to us that this information should have been in one of the manuals.

The manual claims that the cursor is addressable and, indeed MBasic includes the POS function which returns the location of the cursor, but there is no corresponding function to position the cursor. Microsoft GW (Gee Whiz) Basic is not implemented under CP/M, and the only way of moving the cursor in standard MBasic is with the TAB command. Could this be what the manual means by "addressable"?

Bottom line: the display is excellent for text. The amber color is easy on the eyes, and the characters are very legible, albeit rather small. Graphics may be possible—the manual claims they are—but there is no documentation and we were unable to produce any graphics at all in Basic. (Also see the later section on *Fancy Font*.)

System Unit And Disk Drives

The system unit houses the microprocessors (the main Z80A mpu, a second Z80A for the keyboard interface, and three control mpus), memory (64K RAM, 4K ROM), display screen, acoustic coupler and modem, I/O ports, printer, and disk drives.

The benchmark time of the system with MBasic is comparable to other Z80A based systems running at 4 MHz (see Table 1). We did not run the benchmark with CBasic, but experience has shown that it is considerably slower but

Keys of numeric keypad (right) double as cursor control keys.

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CIRCLE 121 ON READER SERVICE CARD

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much more accurate than MBasic (see discussion in the review of the Magic computer in the March 1984 *Creative Computing*.)

The Access has a real-time clock that must be set every time the computer is powered up. This is typical of other similar machines; however, after getting used to using notebook computers that retain the date and time, we think other machines should employ a small battery to refresh a small portion of memory with the date and time.

In our opinion, a 2½" margin at the bottom of single sheets is too large.

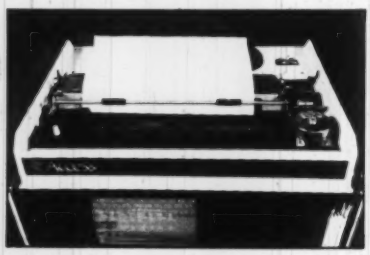
On the front of the Access are two vertical half height (half width?) 5¼" disk drives. They use a rotating handle to secure the disk in the drive; we have found this kind of handle to be sturdier and more reliable than the more common pivoting door.

Each drive is a double density, 40-track unit capable of storing 180K of programs or data. Optionally available are double-sided disk drives and external 8" drives.

To the right of the disk drives is a compartment which can store ten disks, although if you want room for your fingers to get them out, five or six is more realistic.

On the rear of the system unit is a rocker on/off switch. When turned on, the fan starts up, and the computer looks for a system disk and then loads it from whichever drive it is in. If it does not find a system disk, it keeps trying the drives in turn until its owner gets the clue and puts the right disk in one of the drives. The noise of the fan is not obtrusive, but it certainly leaves no doubt that the computer is on.

On the rear of the system unit are connectors for the I/O ports: two RS-232 serial ports, a Centronics parallel port, an IEEE-488 port, and composite video output.



We found it was easier to use the printer with the cover off.

A system check-out disk is included with the system. One paragraph in the manual is devoted to using this disk (the paragraph is updated with an errata sheet). What you don't find out until it is too late is that the test requires two previously formatted blank disks. Without them, the test must be aborted, i.e., the computer must be turned off and restarted. Oh, for a BREAK key.

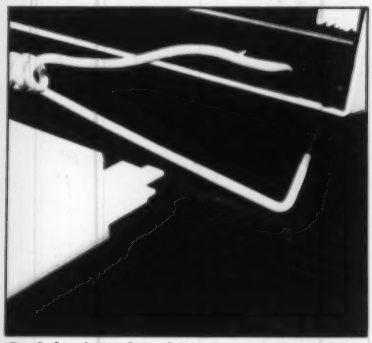
Built-in Printer

The printer, which is built into the top of the system unit, is identical to the Epson MX-80 FT with Graftrax Plus and apparently is procured from Epson on an OEM basis. The printer is normally furnished in the friction feed configuration, although a forms tractor is available as an option.

As we remarked earlier, the dust cover must be removed to change the ribbon or insert paper in the printer. Although the manual recommends replacing the dust cover after the paper is loaded, we found this very inconvenient with single sheets of paper; perhaps for continuous form paper it would be acceptable.

One major difference between the mechanism in the Access and a free-standing printer is that the Access printer has no external paper roller knob. Thus, once the paper is slid into the insertion slot and the release lever is locked, keys must be pressed on the keyboard to advance the paper to the desired starting point. Although the practice is not recommended, we found that with the cover off, the paper roller drive gears were exposed and could be turned by hand to adjust the paper position.

When triggered, the sensor which determines that paper is out stops the printer. Unfortunately, at this point the print head is 2½" from the bottom of the sheet. In other words, if you are printing single sheets, you can not print closer than 2½" to the bottom of the sheet, an unacceptably large margin in our opinion. Of course, with continuous feed paper, this is not a problem.



Both keyboard and system unit have folding stands to provide a few degrees of tilt.

The built-in printer is the normal default printer from any software package or Basic, although the system can be reconfigured for an external printer on either a serial or parallel port. Normally, you would use the print routines built into whatever software package you were using (*Perfect Writer, Perfect Calc,* etc.) or in Basic. However, you can also use the CP/M print utility, TYPE, to print any file or data stored on either disk. In addition, the Access has a PAGE PRINT key that causes the text on the first 24 lines of the screen to be printed; the commands and system information in the 25th line will not be printed. This facility is useful to print a short letter or memo that you have created with the Access Screen Editor (about which, more later).

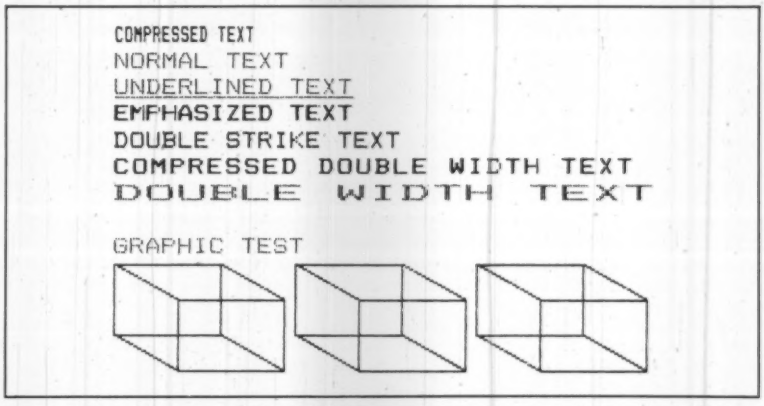


Figure 1. Examples of normal typefaces, text enhancements, and dot graphics on the built-in printer.

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Actrix.

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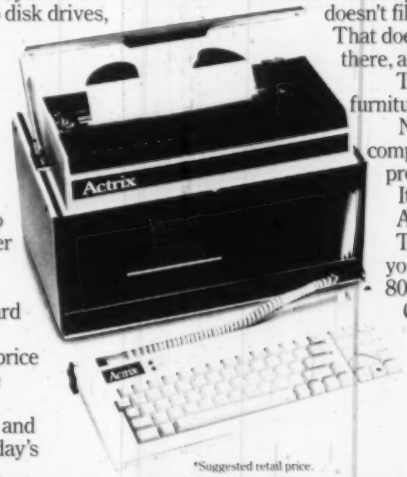

Actrix

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CIRCLE 102 ON READER SERVICE CARD

Like the Epson MX series, the Access printer has extensive capabilities to produce various text enhancements such as compressed, double strike, double width, emphasized, underline, superscripts, subscripts, and combinations of these. In addition, all the other Epson commands are recognized for things such as backspace, line spacing, horizontal and vertical tabs, paper advance, column width, and form length. Both single and double density dot graphics are possible too (see Figure 1).

CP/M Operating System

The Access uses the CP/M operating system, version 2.2. This is the latest basic version of CP/M and has few extra commands or utilities. The in-memory commands consist of the standard DIR, TYPE, REN, ERA, SAVE, and USER.

The two extended disk commands are DIRU which produces an enhanced alphabetical disk directory, and DISKU, a disk maintenance utility for the Access. It is used to format and verify disks, transfer the CP/M operating system, and make track-for-track copies. It also allows file transfers between various disk types (single-sided, double-sided, 5¼", and 8").

Another utility program unique to the Access is CONFIGU which allows reconfiguration of ports, printer attributes, and monitor attributes. These attributes can be permanently saved on a disk called WAKEUP which must be run first upon powering up the system (waking it up?).

MBasic And CBasic

The Access is one of the few computers to include both MBasic (Microsoft) and CBasic (Digital Research). This is an advantage for users who are doing programming and not just using off-the-shelf software packages, as MBasic, an interpreter, can be used for program development and debugging, and CBasic, a compiler, can be used for long runs.

The version of MBasic included with the Access is officially numbered Release 5 and, according to the manual, "is the most extensive implementation of Basic available for microprocessors." Well, not quite. This version of MBasic has been around for quite some time and is beginning to show its age. It has all of the standard features, but lacks many that we have come to expect on newer machines, even 8-bit Z80-based computers. The simple fact of the matter is that CP/M (a Digital Research product) is not as hospitable a host to MBasic as the Microsoft operating systems (MS-DOS and MSX).

In any event, MBasic on the Access is probably adequate for most applications. However, it does not have on-screen editing, graphics or sound commands, BLOAD or BSAVE, CLS (a real pain), or OUT. Also, although the Access has a real-time clock, the time and date are not accessible from Basic. As we mentioned previously, the manual does not give the meanings of ASCII codes over 126.

The MBasic manual is as incoherent as ever. We don't see how Microsoft can get away with continuing to supply this abomination to the many manufacturers using their Basic, but when you have the only game in town...

At least the CBasic manual appears to have been written by just one person (or team) and is sensibly organized. On the other hand, you should not expect to learn CBasic from just this manual. An introductory text or the tutorial series that appeared in *Creative* starting in November 1983 is probably the best bet.

CBasic is distributed by Digital Research; it is a compiled version of the Basic language which means that it ought to run faster than an interpreter. Sometimes it does, and sometimes it doesn't. It really depends upon the type of program being run.

The first hurdle you face with CBasic is creating a file of program statements to be executed. This may sound simple, but such is not always the case. Since the CBasic manual was prepared by Digital Research, whose writers had no idea what computer or word processor would be available, the manual simply says, "Using your text editor, create a file named TEST.BAS." Later we find that it must be on the same disk with CBasic. How does one do that with *Perfect Writer*? Neither manual provides a clue. It turns out to be reasonably easy, but it took a half hour of experimentation to solve this little problem.

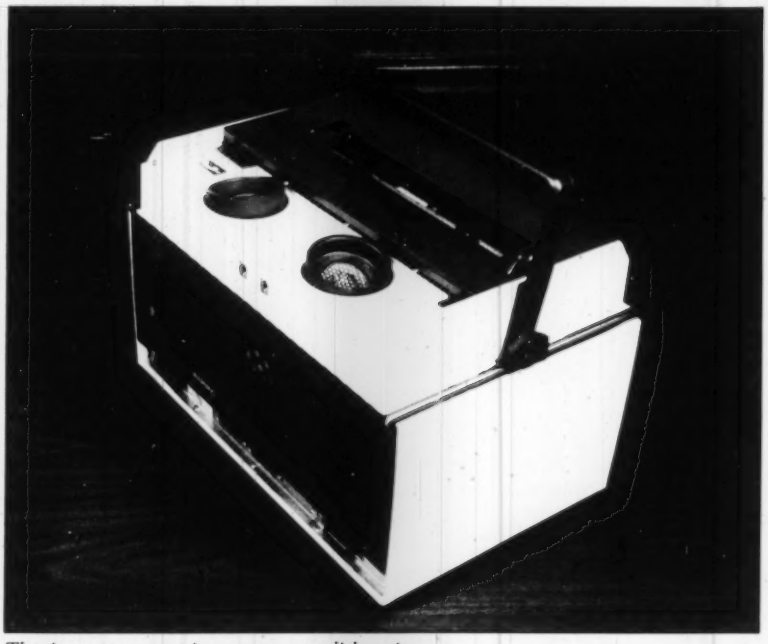
Incidentally, these kinds of software and manual incompatibility problems are not unique to the Access; most computers except those with completely integrated software such as Lisa suffer from them to one extent or another.

In any event, once you have figured out how to create the CBasic files, you must compile the file with CBAS2 and run the compiled program with CRUN2. (The manual specifies CBAS and CRUN, but they are not on the disk.) The language worked as expected, although we did not try any weird or wonderful things.

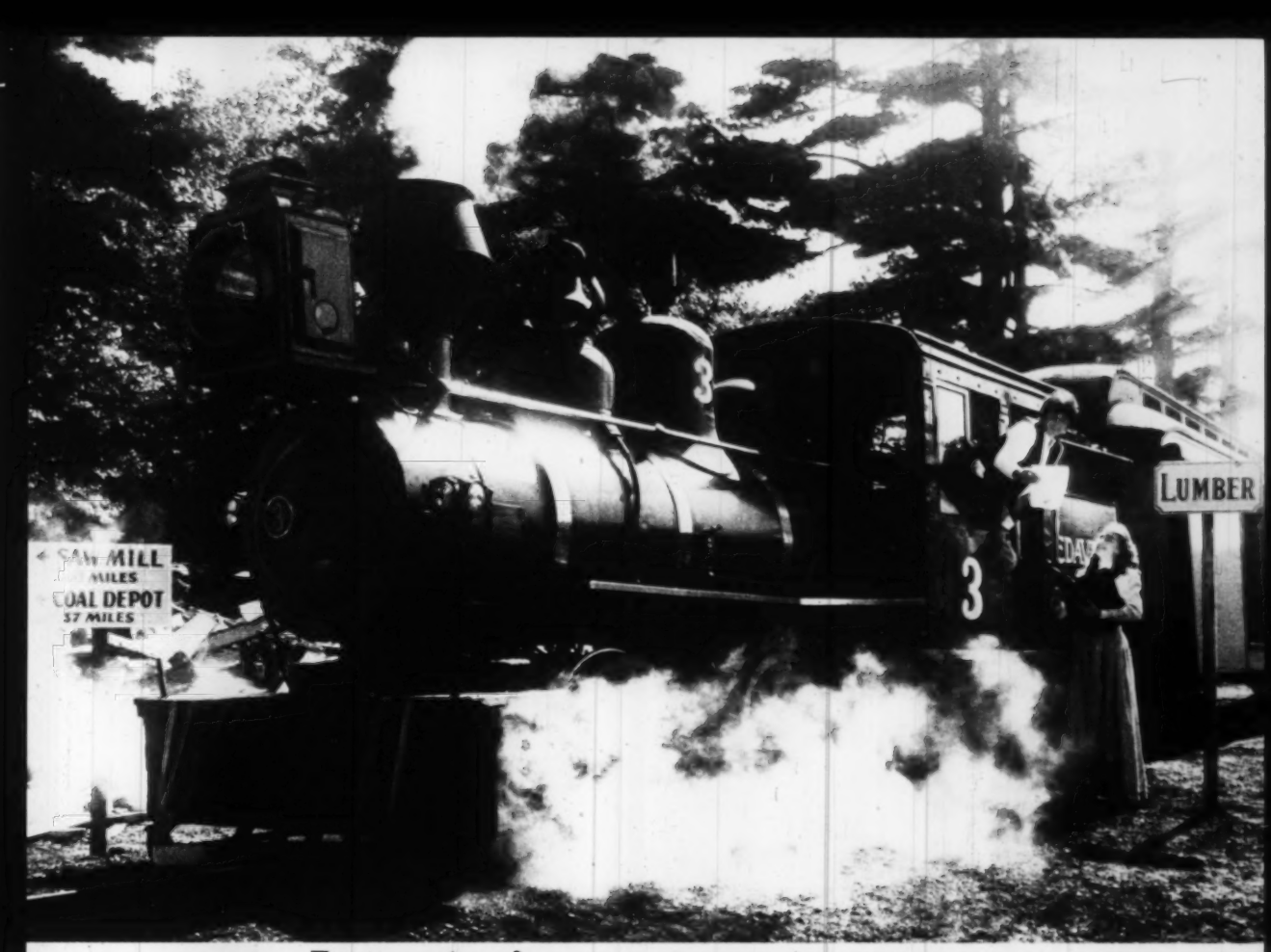
Applications Software

The Access is bundled with an impressive array of software including three packages from Perfect Software, *Personal Pearl* from Pearlsoft, and *Money Maestro* from InnoSys.

Perfect Writer comes with four disks, a 378-page manual, and an eight-panel reference card. It is a comprehensive word processing package with all the expected features and several advanced features. These include virtual memory architecture which permits running programs that are larger than the internal memory,



The Access computer is a compact, stylish unit.



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An impressive array of software and manuals are bundled with the Access.

multiple file buffers which allow you to access several files simultaneously, and multiple file display which allows working on two files simultaneously.

Yes, there are some annoyances with *Perfect Writer*. For example, on which disk would you expect to find the main programs: (1) a disk with a printed label and jacket from Perfect Software and Actrix Corp. marked "Installation Diskette" or (2) a disk in a plain white jacket with a photocopied plain label reading "Perfect Edit Diskette"? Sure, the disk you want is Number 2. To get up and going, where would you expect to start reading the manual: (1) Page 1 or (2) Page 267? You guessed it: page 267 is the first page of Appendix A which tells how to install the system. And if you thought that the default printer codes on the Installation Disk were for the Epson unit built into the Access, you would be wrong.

But by and large, *Perfect Writer* is a good, competent word processing system. Coupled with *Perfect Speller*, the extensive tutorial "Lessons" disk, and the excellent manual, it should meet the needs of the most demanding user.

Perfect Calc is an easy-to-learn and easy-to-use electronic spreadsheet modeled on *VisiCalc*, but with a command structure virtually identical to *Perfect Writer*. This alone makes it simple to learn, and most of the commands are quite logical so even first time users will feel comfortable with this system quickly.

Beyond the normal spreadsheet functions, *Perfect Calc* permits multiple spreadsheets to reside in memory, two of which can be displayed simultaneously. In addition, data can be transferred from one spreadsheet to another with relative ease. Another neat feature is the ability to recalculate just a small portion of the spreadsheet rather than the entire thing; this is a great timesaver.

Perfect Calc comes with the program disk, a second disk of tutorial lessons, a seven-panel reference card, and a 346-page manual.

As mentioned earlier, the cursor movement keys are recognized by both *Perfect Writer* and *Perfect Calc*. Unfortunately, neither manual or reference card mentions that fact; hence, a user could think he was stuck with the control key combinations, when in fact, he could use the much easier single stroke cursor keys.

Perfect Filer is a database system designed primarily for mailing lists. It comes with two disks, one for an individual member database and one for an organizational database. As you learn how to use these pre-formatted databases, you can start building your own customized ones. But, as we have commented previously, the manual is organized quite differently from the other Perfect Software manuals and is not quite as user-friendly, although all the necessary information is there.

With *Personal Pearl* included with the Access, you probably will want to use it as your generalized database system and not try to extend *Perfect Filer* beyond mailing list applications. *Personal Pearl* is a flexible database system that lets you design customized forms, design reports, and, of course, enter the data and produce reports.

Personal Pearl can be used for mailing lists, of course, but also works well for such things as appointment scheduling, inventory control, client costing, and cataloging. It comes with six disks including a "Welcome Disk," fat 400-page manual with excellent 91-page tutorial section, and five-panel reference card.

Money Maestro is a home budgeting and check register system. Basically it revolves around a check register, payee list, and expense and income category list. As transactions occur during the month, they are filed in the appropriate places which permits you to get periodic reports of the complete check register, payee history, budget (actual and real), detailed expenses by category, list of bills, and the like.

If you are into this sort of thing, or want to use this package for a small business, Checks To Go offers blank checks and tax forms to go with *Money Maestro*. The basic package comes with a disk, 52-page manual, and installation card.

Screen Editor

Short documents and memos can be created without any word processing package at all by simply using the screen editor. This editor is much like a typewriter for which the screen is the piece of paper. Basically, you type on the screen (up to 24 lines of 80 characters) and use the PAGE PRINT key to get a hard copy. You can't save anything created on the screen editor, but it is handy for quick and dirty stuff.

Fancy Font

Fancy Font is a package that we have never seen bundled with a computer, and it is an interesting one. The program provided is PFONT which is a subset of the *Fancy Font* system by SoftCraft, Inc. PFONT has the ability to produce text in 24 different typestyles by using the graphics mode of the Epson printer. These fonts are the result of the printhead passing over the same line as many as six times and moving the paper as little as 1/216 inch between passes. Some of these fonts are shown in Figure 2.

The fonts available on the Access disk fall into four groups: old English, Ro-

Roman character writing.
Sans Serif character writing.
Olde English character writing.
Script character writing.

Figure 2. Four sample PFONT fonts produced on the built-in printer.

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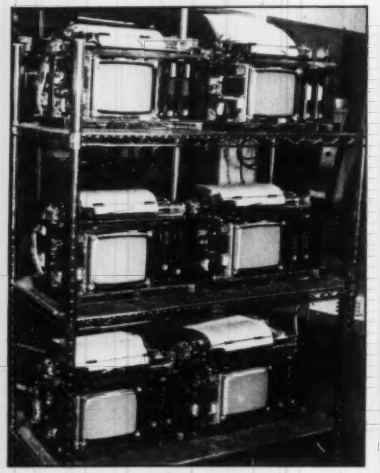
CIRCLE 168 ON READER SERVICE CARD

man text, script, and sans serif. The manual devotes 65 pages to describing how to use PFONT, but the examples make it very easy to figure out if you don't want to wade through the text.

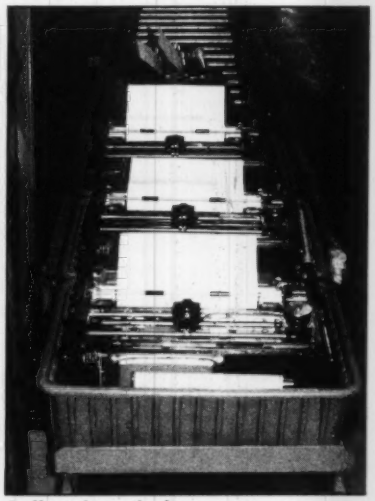
Telecommunications

As mentioned earlier, the Access has both an acoustic modem on the top back of the case, and a direct connect modem equipped with two modular telephone jacks. One jack connects to the wall connection and the other is for an optional connection to a telephone for manual dialing and/or regular voice use when the computer isn't using the line.

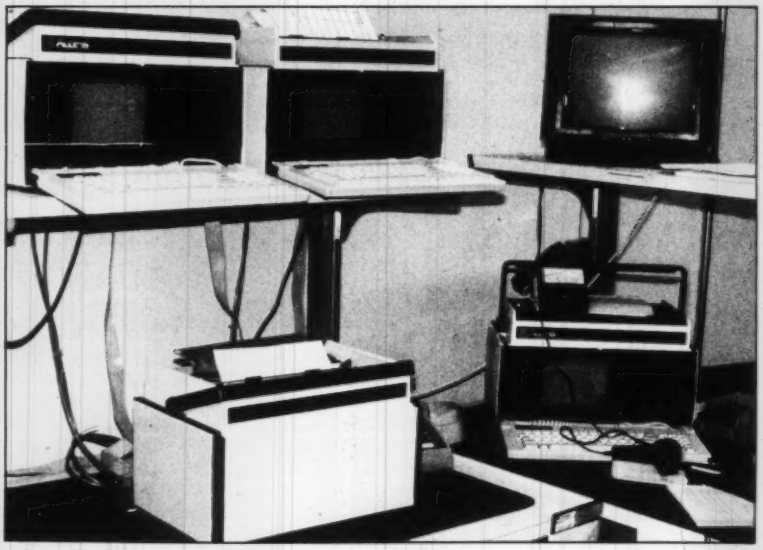
Included on the Access system disk is a telecommunications utility, TELCOMU. This is a comprehensive menu-driven package that permits you to set up to ten profiles (terminal and modem characteristics, number of readials, phone number, and log-on code). Once connected, the Access can upload, download, or act as a dumb two-way terminal. All-in-all, TELCOMU is a comprehensive, easy-to-use package that is well-explained in the 17 pages the manual devotes to it.



Units awaiting final assembly at the Actrix plant in San Jose.



Rolling down the line.



Access computers undergoing burn-in and checkout at the Actrix plant.

Documentation

We have been commenting about the various manuals as we have been going along, so this will be a brief summary. The User's Guide is excellent and has sections on installation, preparation and use of disks, the keyboard, basic operations, the printer, PFONT, telecommunications, CP/M (the only weak spot), reconfiguring, connecting additional devices, and troubleshooting.

As we mentioned earlier, the MBasic manual is a mish-mash of sections written by different people over the span of many years. It is just barely adequate as a reference guide and should certainly be augmented by a decent book as soon as possible after buying the computer. The CBasic manual is somewhat better, but should still be regarded as simply a reference guide.

All of the applications software manuals were prepared by the software producers. We have gotten used to seeing manuals with negligible customization for the particular computer; these go one step further (or back) and offer none at all. This may be either a tribute to the Access which needs no customization or to the software packages which are so general that they will run on anything. We don't wish to be uncharitable, but we think there may be another reason, namely economy, because in most cases, a small amount of customization would have been most welcome.

Conclusions

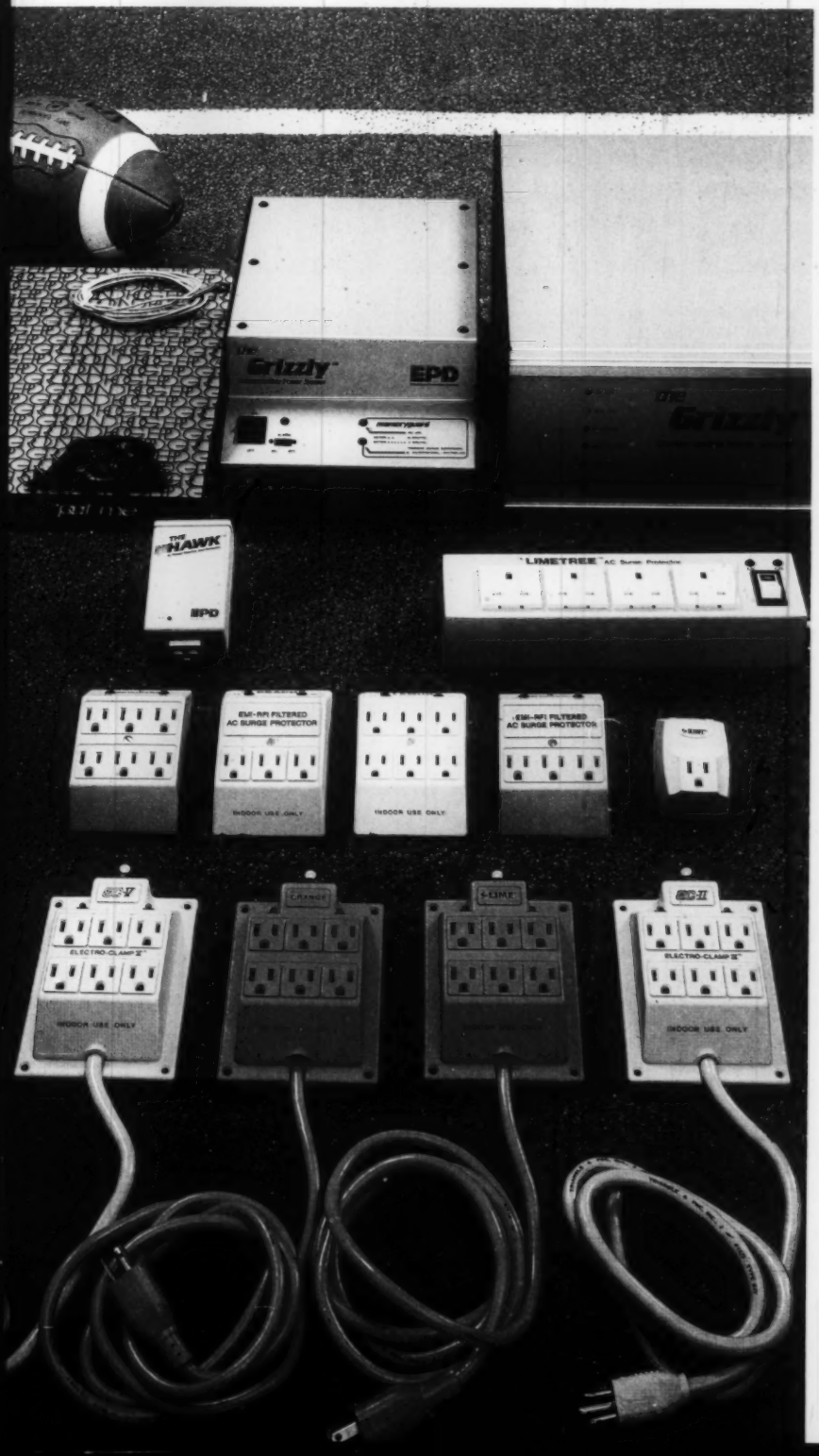
The Access is a nifty computer with a host of desirable features—transportability, built-in printer and modem, adequate size (7") amber screen, and detachable keyboard with a good feel. The bundle of included software is impressive and should meet the needs of the majority of users—at least for a while.

The system is not perfect. It locks up occasionally and can't be stopped except by pressing the system reset, which is like using a sledgehammer to kill a fly. The cursor control keys ought to be recognized by more software, particularly MBasic which should have on-screen editing. The software manuals would benefit from some customization (for example, the CBasic manual could tell how to create a CBasic file with *Perfect Writer* and store it on the right disk).

All in all, the Access offers a great deal of capability and performance at a very attractive $2495 price. At least for now, the built-in printer and modem put the Access into a unique slot in the market shared only by the Sharp PC-5000 and the much more expensive DOT. If it gets a position on dealer shelves, the Access ought to do very well. Ken Uston bought two of them and loves them so much he is writing a simplified manual for the entire system—with that kind of support, how can it be anything but a success?

CIRCLE 401 ON READER SERVICE CARD

BEST DEFENSIVE LINE IN THE LEAGUE



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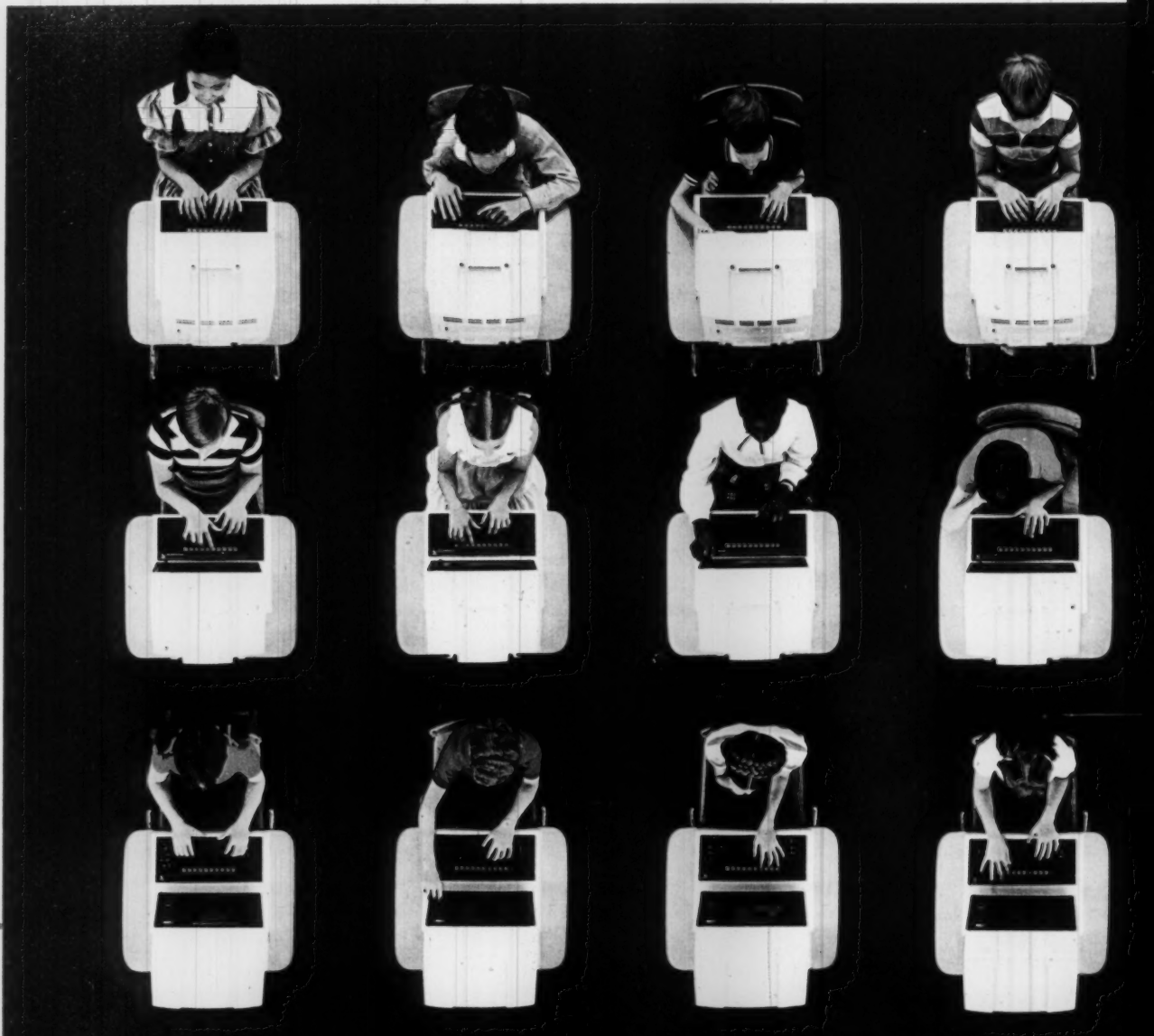
CIRCLE 134 ON READER SERVICE CARD

THE ONE COMPUTER TO HAVE WHEN YOU'RE HAVING MORE THAN ONE.



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ACORN COMPUTER

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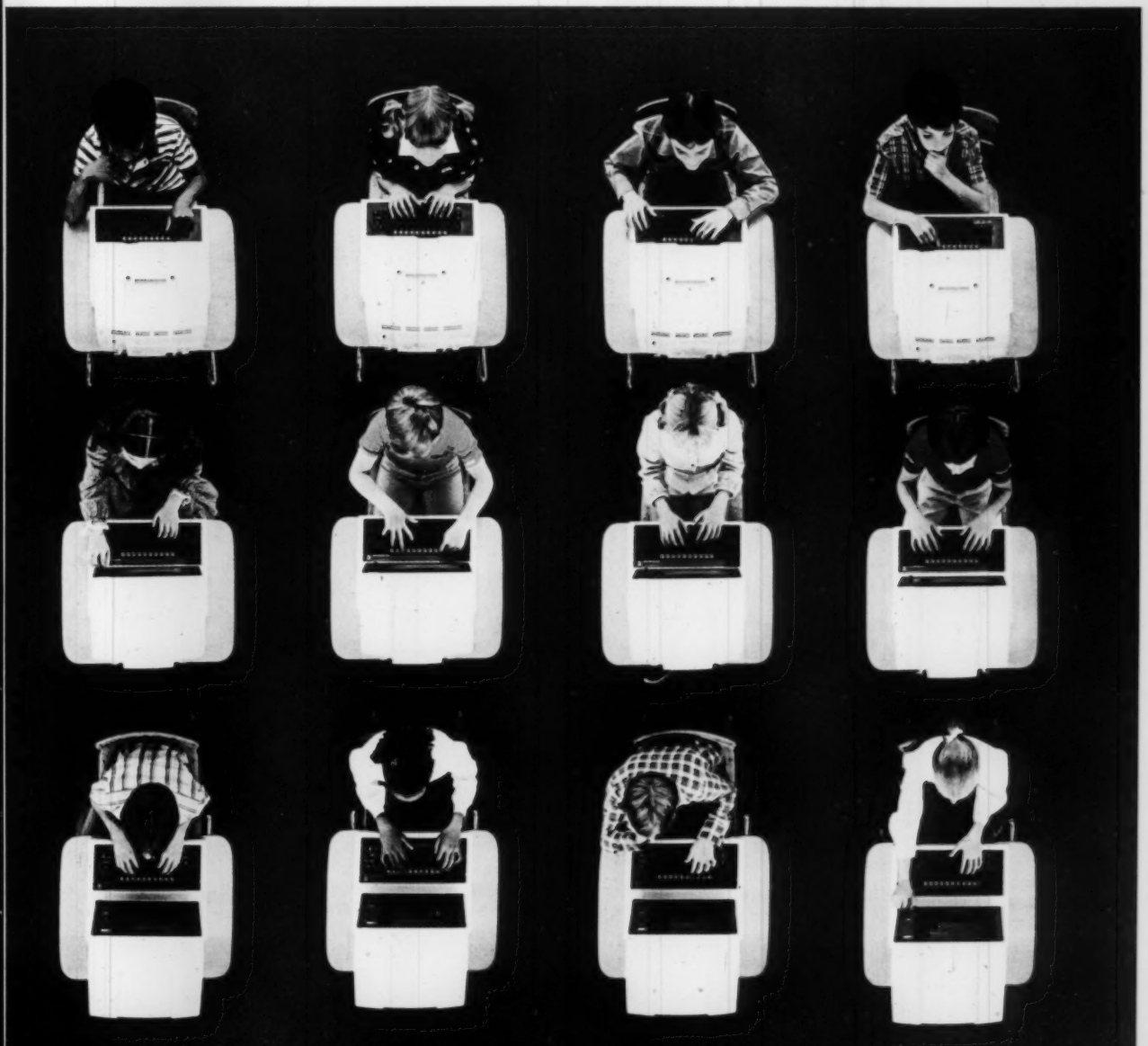
CIRCLE 105 ON READER SERVICE CARD



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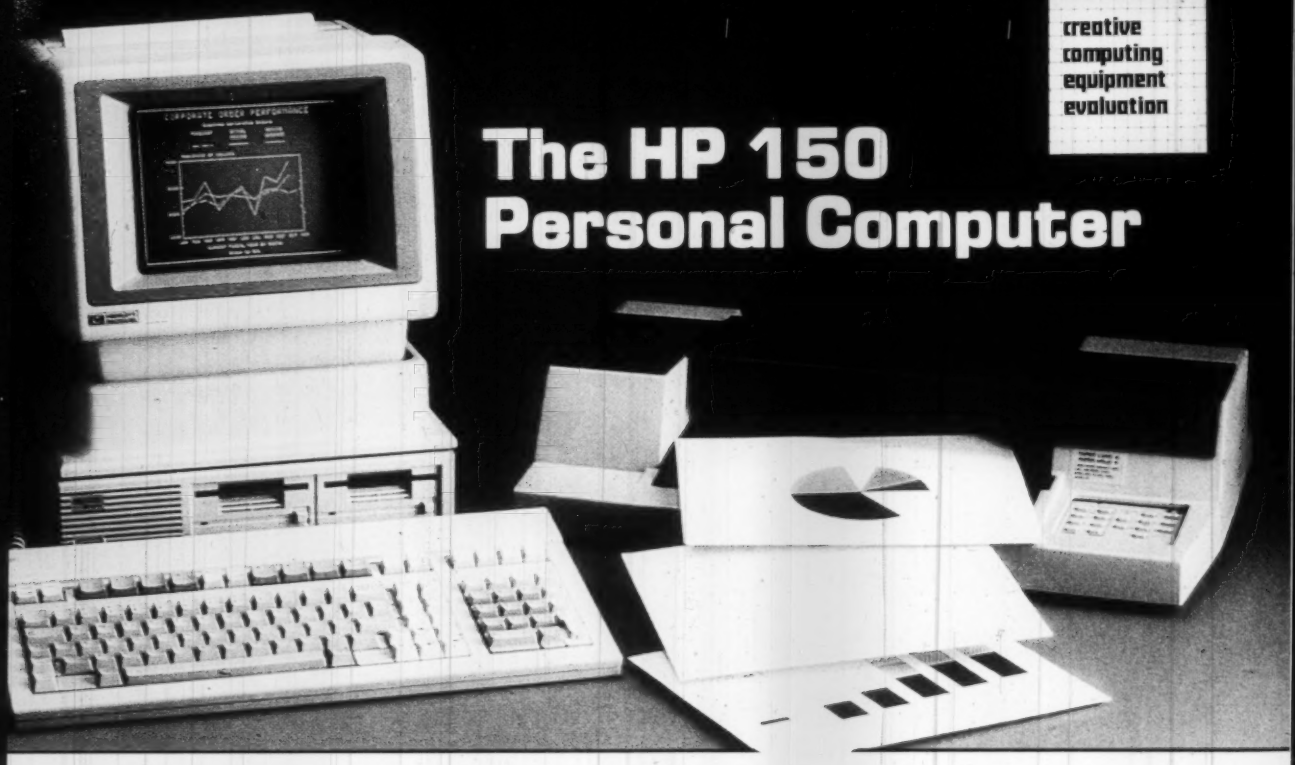
The HP 150 Personal Computer



Shel Talmy

Hewlett Packard has introduced the Series 100 HP 150 personal computer that places computing at your fingertips —literally. The touch screen allows, as Hewlett Packard puts it, the use of nature's most perfect pointing device—your finger. The touch electronics that allow you this luxury, the system processor unit, video display and control circuitry, 256K memory, and three I/O ports are all packaged neatly in a machine that occupies only about one cubic foot—and that includes space for an optional thermal printer with its own connecting cable that fits into a cavity on top of the display unit.

The term "touch screen" is more descriptive than strictly accurate. The screen itself is not sensitive, but is composed of an invisible 27 x 40 grid of light emitting and photo diodes that correspond to options offered by the various application programs. This provides the ability to implement commands by touch on each row of the display and every two columns.

When you choose the item you want, you press the desired box and the cross-hatched infrared beams are broken, converting your choice into computer commands. The space provided for your finger is more than adequate, so you should never encounter the problem of overlapping—unless, of course, you are Andre the Giant or Paul Bunyan.

Operating System

The HP 150 Personal Computer uses MS-DOS 2.0 from Microsoft Corpora-

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HARDWARE PROFILE

Product: Hewlett Packard Series 100 HP 150 Personal Computer

Type: Small business computer

Operating System: MS-DOS 2.0

CPU: 16-bit Intel 8088

RAM: 256K standard, expandable to 384K, 512K or 640K. Also 6K of static RAM for the screen.

ROM: 160K

Keyboard: Detached, 107 full stroke keys

Disk Drives: Comes with dual 3.5" Sony format micro diskette drives

Display Screen: 9" diagonal with "HP Touch" sensitive to every row and every two columns.

Text Resolution: Up to 80 characters x 24 lines with three additional lines for screen labels and system messages.

Graphics Resolution: Monochrome 512 x 390

Sound: Single tones only; no tone generator

Ports: 2 RS-232 serial, 1 HPIB interface bus

Documentation: Owner's manual, Terminal User's handbook, and manuals with each applications software package.

Pricing: System including Systems Master and Applications Master, Computer Tutor, Demo Disk and P.A.M. (Personal Applications Manager) $3995. All applications programs are extra.

Summary: Excellent, compact system. Innovative Touch Screen interface and high resolution graphics.

Manufacturer:
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CIRCLE 167 ON READER SERVICE CARD

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tion as the standard operating system. HP has enhanced MS-DOS so that all the touch screen features are supported by the operating system. The keyboard "softkeys" and the graphics display can all be accessed through MS-DOS.

The Basic System

The HP 150 as received from the manufacturer consists of three components: the CRT, which HP calls the display unit; dual 3½" micro floppy disk drives; and a detachable keyboard. The package includes the Systems Master disk with MS-DOS, the Systems Applications Master, a demo disk and the Computer Tutor, plus the User's manual and a Terminal User's handbook. The price is $3995. With easy to follow directions and illustrations to guide you, it takes very little time to connect the components. I was up and running in about ten minutes.

The HP 150 uses the 16-bit Intel 8088 microprocessor and runs at a clock speed of 8MHz. The system comes standard with 256K RAM plus an additional 6K of RAM for the screen and 160K of ROM totaling 422K in all.

The CPU is contained in the display unit, and all connections and ports are on the back. There are two card slots that can be used for extra memory, IBM emulator card, or a modem. Two RS-232 serial ports are provided along with an HP-IB (interface bus). More about that later. The 9" CRT is green phosphor. I queried HP about this, as the small size is unusual for a desktop computer of the non-portable variety. Here are the reasons they gave me for the choice:

The HP philosophy is that the user's workspace should be available for the assortment of oddments normally found on a desk.

First, they were concerned that a desktop computer should not occupy the entire desk top. The HP philosophy is that the user's workspace should be available for the assortment of oddments normally found on a desk, and indeed, the entire system, display, processor, keyboard, floppy and Winchester (optional) disk drives, and integral thermal printer (also optional), occupies only 2.1 square feet of space—about the same as an open loose leaf notebook. The CRT, which is 12" x 12" x 11.3" fits neatly on top of the disk drives, which measure 12.75" x 11.25" x 3.125". The keyboard, which clips into the back of the CRT with a standard phone jack, measures 18" x 8.9" x 1.4".

The HP 150 has a relatively compact footprint (11 x 13") compared to the IBM PC (16 x 20"). On the other hand, the keyboard is a largish 18 x 9".

The second reason HP gave for the small monitor was sharpness. The CRT is of high quality and the screen resolution is excellent (the alphanumeric display is 720 x 378), although the size of the characters displayed (1.3mm x 2.8mm) might cause a problem for the farsighted individual with short arms.

Micro Diskettes

In keeping with the "small is better" philosophy, the HP 150 uses the Sony format 3½" micro diskettes. The micro floppies are encased in a hard plastic cover, and a metal shutter protects them when not in use—a very nice feature. These micro diskettes have a nice solid feel to them, and in my opinion are much easier to handle than the 5¼" floppies. They slide into the drives with no gates to close and pop out as would an 8-track tape when you push the eject button.

Touch screen is efficient and reliable.

The major drawback of these diskettes is storage space; they offer only 270K per diskette. HP told me that 540K diskettes will be available "sometime" in 1984, and that ultimately there will be a format available with more than one megabyte of usable space. One last point about micro floppies: prepare yourself to write very, very small—there isn't much room on the labels.

The Keyboard

The keyboard too, has a nice feel about it. The keys are sculpted and matte finished in three colors for easy differentiation between function and typing keys. The 107-key keyboard contains the full local editing keys such as cursor control keys, display scrolling keys, Next and Prev keys for scrolling by pages (as well as allowing application programs to use them for the selection of alternative choices), and Insert and Delete keys for inserting and deleting single characters or entire lines.

The function keys are screen labeled so that you have the option of using the function keys or the touch screen to implement an application. There are also special keys that perform dedicated functions. The Menu key is used to toggle the screen labels on and off, and the Control, Shift, and Menu keys, pressed simultaneously turn the touch screen on

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The touch screen uses a 27 by 40 grid. Any of the 1080 locations can be "read" independently of the screen display.

and off. The key labeled Reset Break turns the computer into a terminal.

Shift and Reset Break gives you a soft reset, which clears the keyboard lock and screen error messages. It also turns off display functions, stops printing, and resets the internal printer. Control, Shift and Reset Break gives you a hard reset which restarts the operating system from disk A.

User System shows the last system keys used, and Shift, User System displays function key labels used by the current applications program. Clear Line clears a line from the cursor position to the end of the line, and Shift, Clear Line blanks out the line containing the cursor. Clear Display deletes all characters after the cursor from display memory and Shift, Clear Display clears all lines from display memory. The 18-key numeric pad can be shifted into a graphics pad by pressing Control and the minus sign on the numeric pad.

The CRT

The CRT can display 1920 characters in a 24-line by 80-column format. The 25th and 26th lines are used for the screen labeling of function keys, and the 27th line is for system status and error messages. The screen memory stores two pages of text, which allows off-screen storage display for scrolling vertically without interrupting the processor. The standard display is green characters against a black background. The graphics resolution is 512 x 390 pixels.

HP says the aspect ratio of 1:1 guarantees symmetry so that circles will look like circles not only on the screen but when transferred to an HP graphics printer.

The numeric keypad also serves as a graphics keypad, allowing you to turn the alpha and graphic displays on and off, clear the graphics display, and transfer the graphics display to an HP graphics printer. It also displays the graphics cursor and allows it to be moved around the screen.

Peripherals

The HP 150 Interface Bus enables you to daisy chain up to 15 HP peripherals to one I/O port. In addition to the $3\frac{1}{2}$" micro diskette drives that come standard, the 150 can be configured with $5\frac{1}{4}$" disk drives or Winchester hard disks—up to eight drives. The Winchester comes in 5 or 15 megabyte versions, and up to 120 megabytes of on-line storage can be utilized by the system. The Winchester disk drives fit under the system and so do not encroach on the workspace.

P.A.M.

The HP 150 comes with a supervisory program that is called P.A.M. (Personal Applications Manager). P.A.M. is used as a coordinator to translate the function you have touched on the screen into computer commands. Another way of putting it is that P.A.M. is a shell you use instead of typing MS-DOS commands. Application programs from all disks are listed on the screen. All you do is touch the program desired, which is highlighted, and then touch the start application label that is called Start Applic. The 150 emits audible "clicks" reminiscent of contented crickets on a drowsy summer evening, to let you know that you have made contact.

If, for some reason, you want to do this from the keyboard, you can accomplish this by using the tab keys to position the arrow on the desired program and pressing the select key. P.A.M. can: start an application program, set the date and time in the HP 150 clock, list all installed application programs on available disks, start the File Manager, help you by giving some simple explanations, and make the HP 150 act like a terminal. The HP also gives you the option of using the keyboard commands or the function keys that correspond to the labels on the screen (softkeys).

P.A.M. is loaded automatically when the operating system is booted. If you are already using an application, you can always get to P.A.M. by exiting that application. As soon as you leave it, P.A.M. returns to the screen.

The beauty of P.A.M. is that you can perform all file functions without learning a single MS-DOS command. Is that a cheer I hear from the novice computer users struggling to memorize computerese?

The Procedure

When you boot the system, P.A.M. comes up automatically and displays the application programs available on all drives. In addition, it provides disk applications, accessed through P.A.M. These disk applications are menu-driven and use "HP Touch." The choices are MS-DOS Commands, Format, and Device Configuration. Choosing MS-DOS Commands loads them into memory and gives you an A> so that you can operate your computer like any standard non-touch system. The other two choices, Format and Device Configuration are self explanatory.

At the same time the screen also displays labels that allow you to start an application, set the date and time, reread the disks, make your computer a terminal, get a help menu, or use the File Manager. The File Manager gives you the necessary functions to run your system—delete, copy, choose a directory, rename, etc.

When you use your finger to break the vertical and horizontal beams, the system recognizes this by highlighting the spot you touch in inverse video. You can, in fact, move your finger over the entire screen and watch the highlights in your wake. The system will not react until you remove your finger, allowing the beams to reconnect and zero in on the closest photo receptor to your selection.

To use the Install program, which is part of the Applications Master, for example, press Install—it lights up. Touch Start Applic; Install loads into memory and allows application programs to be added or removed from the Applications Selection menu of P.A.M.

Another program on this disk is Set up P.A.M. This disk application lets you arrange the names of application programs on the Applications Selection

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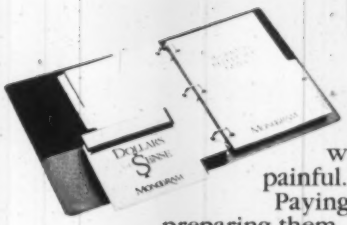

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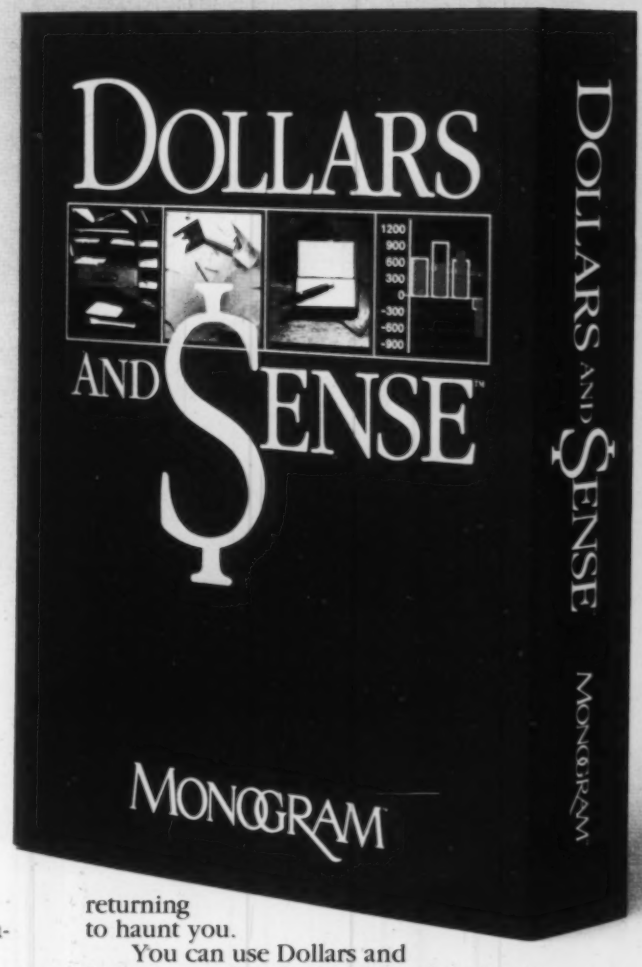

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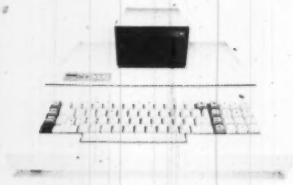

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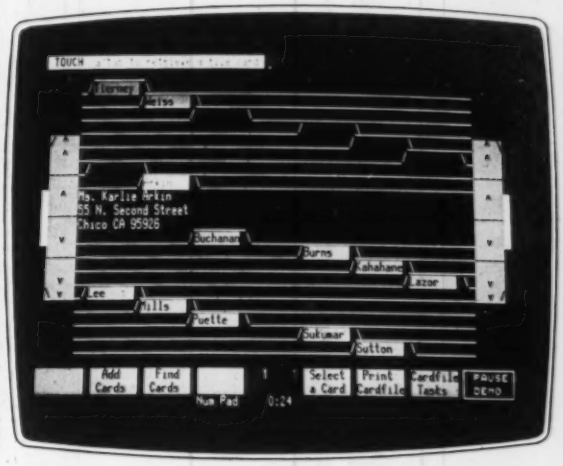


View of whole card file plus softkeys.

menu in the order you want, and you can autostart any frequently used application from a cold boot.

In addition to the standard Copy Files option, P.A.M. also has a Backup option that lets you store files in a compressed format, handy for archival storage. P.A.M. also tells you when there is not enough room left on the disk to which you are copying and will politely advise you to change disks.

Enough nuts and bolts for the moment. Let's see how P.A.M. and the Touch Screen apply to the programs you want to use.

MemoMaker

Here is where the true ease of HPTouch asserts itself. *MemoMaker* is a simple word processor that HP says was created exclusively for the casual writer whose main occupation is not writing. *MemoMaker* has several features in common with its more powerful cousin, *WordStar*, and is a breeze to use. It is important to note that *MemoMaker* and *WordStar* are entirely compatible, so a document created in one can be edited in the other. The program sells for $150.

When *MemoMaker* is implemented, you get the following main menu in screen labels: File Keys, Block Keys, Format Keys, Print Keys, Get Memo, Center Line, Help, and Exit MemoMaker. In addition, Line 1, Column 1, appears at the top of the screen so you can just start writing if you are satisfied with the defaults.

Let's assume you are not and want to change the format. Touch Format Keys, and a sub menu appears. This gives you the choices Left Margin, Right Margin, Set Tab, Clear Tab, Margin Release, Help, and Memo Maker Main. To set the left margin, move the cursor to the spot where you want the new left margin to be. You can do this with the cursor key or your finger. In the latter case the cursor will follow your finger there. Touch the Left Margin label and the margin is set.

I should point out, if you'll excuse the pun, that using your finger to set the margins lacks the fine tuning necessary for pinpointing an individual column. I tried it both ways and using the cursor key is the outright winner. The same procedure applies to the right margin. To set tabs, you touch one of 16 settings in the form of boxes that appear in the ruler line.

MemoMaker has several features in common with its more powerful cousin, WordStar, and is a breeze to use.

Block commands are just as easy to use. The sub commands give you the choices: Cut Out Block, Copy Block, Paste Block, Align Block, Enhance Block, and Help. To cut out a block of text, for example, move the cursor to the first character of the block and touch the Cut Out Block label. You get a blinking cursor and are advised to "Use the cursor to define a block, then select 'Block OK.'" Move the cursor to the end of the block and touch Block OK. The block of text you have just defined will disappear. You can also underline or put a block of text in bold-face with touch commands.

When you are finished with your memo, you save it under the sub menu from the File Keys option, then press Print Keys. The following sub menu will appear: Double Space, Auto Feed, PRN:*, Page Break, Print Memo, Skip Page, and Help. Choose the options you desire. The PRN:* refers to the printer you wish to use if there is more than one. Touch Print Memo, and you get a hard copy of your latest creation.

This program is easy enough to use, so the novice can be turning out productive work within minutes of sitting down in front of the terminal.

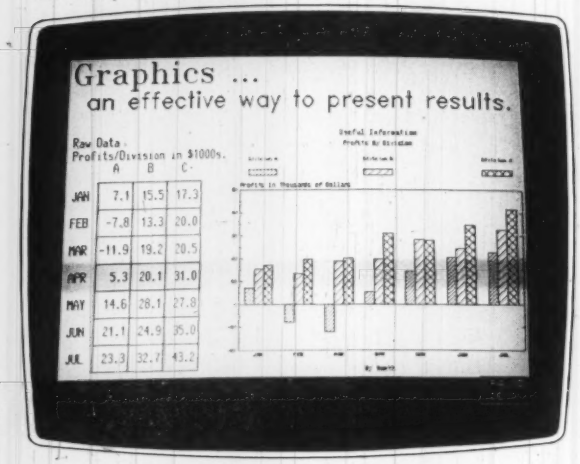
WordStar

I wondered if *WordStar* could be as friendly as *MemoMaker*. This, most popular of all word processing programs, is notorious for its multitude of commands that require prodigious feats of rote memory. Could true happiness be found amid the forest of control-K, control-O, and dot commands? I am delighted to report that, indeed, you can process words without constant reference to lists of *WordStar* commands.

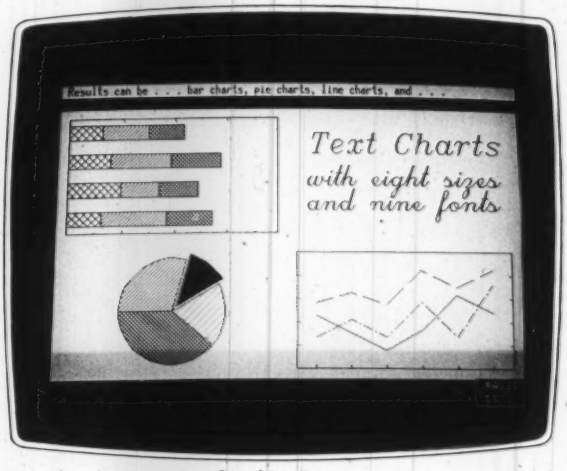
Virtually all of the *WordStar 3.3* commands are available on softkeys. For many people, the HP 150 will be worth the price for this feature alone. Those with a more traditional turn of mind have not been ignored either. You can still operate *WordStar* with control codes from the keyboard. The Series 100 *WordStar* costs $500; *SpellStar*, $250; and *MailMerge*, $250. Or the entire package can be purchased for $850.

VisiCalc

Another standard program that no self-respecting computer user can be without is *VisiCalc*, which sells for $250. The HP 150 version has softkeys that cover most of the *VisiCalc* commands



Graphics Demo.



Graphics Demo.

including an extensive Help menu, and all the functions can be accomplished by touch. Again, HP allows the experienced *VisiCalc* user to work with the conventional "slash" commands.

The novice will not have to bother. Operations are clearly labeled on the screen and can be executed by the touch of a finger. An explanation of each command is available on the display for quick reference without having to open a manual, so that the new user can plunge right into forecasts, budgets, financial plans, and all other types of spreadsheet functions with a minimum of training.

Personal Card File

The *Personal Card File (PCF)* sells for $150 and is an on screen Rolodex—and much more. The full screen simulation of a rotary card file allows you to flip through the cards by touching the pictured handles, just as you would do with the three-dimensional version. Touching a tab allows you to view an individual card. Touch Create a Cardfile, set your parameters, name your fields, and you can store as many as 550 cards per disk.

The HP 150 has softkeys that cover most of the VisiCalc commands.

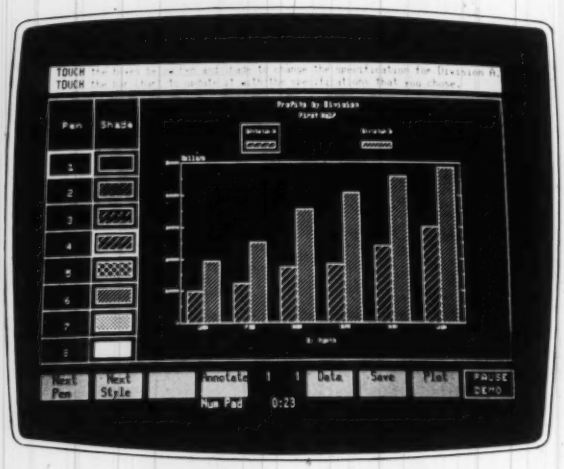
You can, of course, change disks and create as many other card files as you like.

The PCF is, in fact, a simple database management system. It is powerful enough to search a particular file based on any piece or pieces of information stored within a card. In addition, the information can be transferred to Series 100/*WordStar* for form letter generation, and into the HP version of the *Condor Database Management* program.

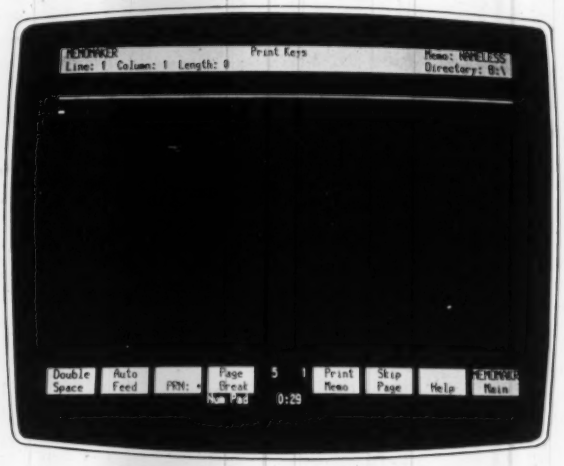
Basic

Having gotten used to touching the screen for the programs I have described, I was really looking forward to HP's version of Basic. I am not really sure what I expected—perhaps the Utopian ideal of communication with programming languages. Touch the screen—and the labels would ask me what type of program I desired and write it for me. Alas, that is the problem with Arcadian wish fulfillments; the mundane and Murphy's Law make a habit of intruding upon your flights of fancy.

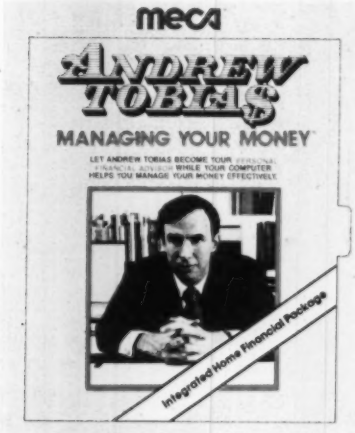
HP's Basic, Version 5.28, which costs



Graphics chart with softkeys.



MemoMaker Submenu Softkeys.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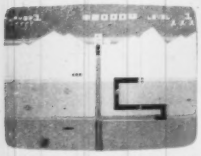

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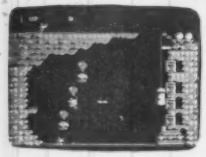

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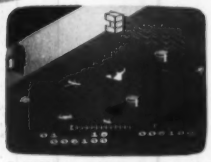

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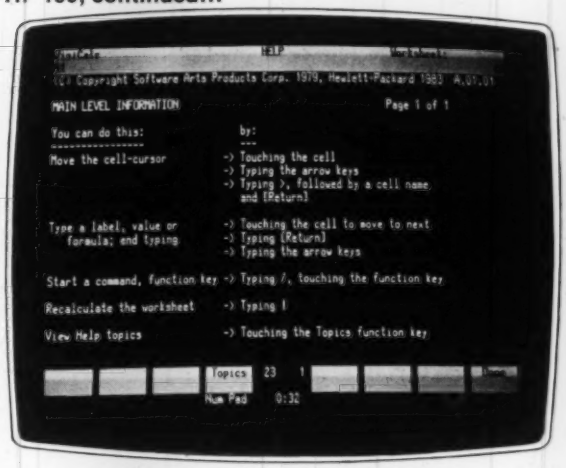
HELP
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MAIN LEVEL INFORMATION
Page 1 of 1
You can do this:
by:
Move the cell-cursor
-> Touching the cell
-> Typing the arrow keys
-> Typing /, followed by a cell name, and [Return]
Type a label, value or formula; and typing
-> Touching the cell to move to next
-> Typing [Return]
-> Typing the arrow keys
Start a command, function key
-> Typing /, touching the function key
Recalculate the worksheet
-> Typing !
View Help topics
-> Touching the Topics function key
Topics
Num Pad
0:32

VisiCalc Main Level Help Menu.

VisiCalc Sample with softkeys.

$300 is pretty standard Microsoft Basic with nary a screen label in sight. In fact, the HP manual suggests that you go out and buy a book on Basic for a better understanding and utilization of the program.

Condor

There are two versions of *Condor* available for the HP 150. Version 20-1 from Condor Computer Corp. in Ann Arbor, MI costs $300, and version 20-3 is $700, with an upgrade version from 20-1 to 20-3 costing $500. Version 20-1 is the simplified version of the database program with 20-3 the full relational database system.

Both versions are a bit of a compromise for HP Touch as they use a combination of typed commands and softkey functions. ENTER, SORT, and LIST must be typed, for example, while you can touch your way through CONTINUE, REVISE, PRINT, DELETE, END, and ABORT. You can also read data in from *WordStar* and the *Personal Card File*, and read in charts from the *Series 100 Graphics* program with touch. The softkeys will make life easier for the novice, but using *Condor* to its fullest will require much more study of the manual than some of the other programs.

Graphics

HP offers three different graphics programs for the 150: HP's own *Series 100 Graphics* selling for $300, plus two graphics packages from Computer Support Corporation, *Picture Perfect* costing $295 and *Diagraph* priced at $395. HP sent me their own *Series 100* package to evaluate. I will have to assume that the other two work as well.

The high resolution and the many options available through touch make this package a pleasure to use. One could, and I did, play for hours putting the graphics program through its paces. You can select pen colors and shading, choose horizontal or vertical orientation, change justification and size, select colors for the plotter and a whole range of other options by touch.

You can also transfer data from *Condor* or *VisiCalc* to plot pie charts, scattergrams, bar charts, or line graphs. For those with a bent for freehand drawing, this can also be accomplished. All in all this easy to use package is a boon for the business person who must generate charts of all types and wants to do it quickly.

Hewlett Packard has gone to great lengths to make their documentation simple and easy to follow.

Documentation

It is easy to see that Hewlett Packard has gone to great lengths to make their documentation simple and easy to follow. In the main, they have succeeded, although some of the documentation falls in the "between two stools" category. By this I mean, that in some cases I think the instruction manuals will be too much for the novice user and too little for the veteran who wants in-depth technical information.

Last Gasp

Hewlett Packard has created in the 150 a system that combines some of the best features of several other computers in one package. It is elegant in design and eloquent in its simplicity.

The touch screen is not a gimmick. It facilitates use of the most common applications of computing and optimizes the most natural way of doing it. The novice who has dragged his feet on the path to the world of computing, perhaps fearful of the expected adversarial relationship with a terminal, now has an easy starting point that leads gently to the mastery of the most formidable programs.

Knowledgeable users, too, will find the HP 150 to their liking. Hewlett Packard has provided a base of excellent programs and is actively seeking support from other vendors. The IBM emulator card will, of course, make instantly available, all the programs written for the IBM PC.

Considering what the HP 150 is and what is does, the $3995 price tag is not out of line, although acquisition of the requisite software, printers, and plotters will bump the cost up considerably. I think it is fair to say that because of this, the HP 150 will probably not be the first choice of the individual user who wants a computer for the home. I suspect that HP's strongest market will be in the office where several users can share programs and peripherals or link their machines into a multi-user system.

Hewlett Packard has made a large commitment to the HP 150 Touch Screen, and it is as certain as anything can be these days that they will maintain it. After the hours I have spent on the system, I am convinced that it is a quality product. I look forward to further software developments from third-party vendors. EC

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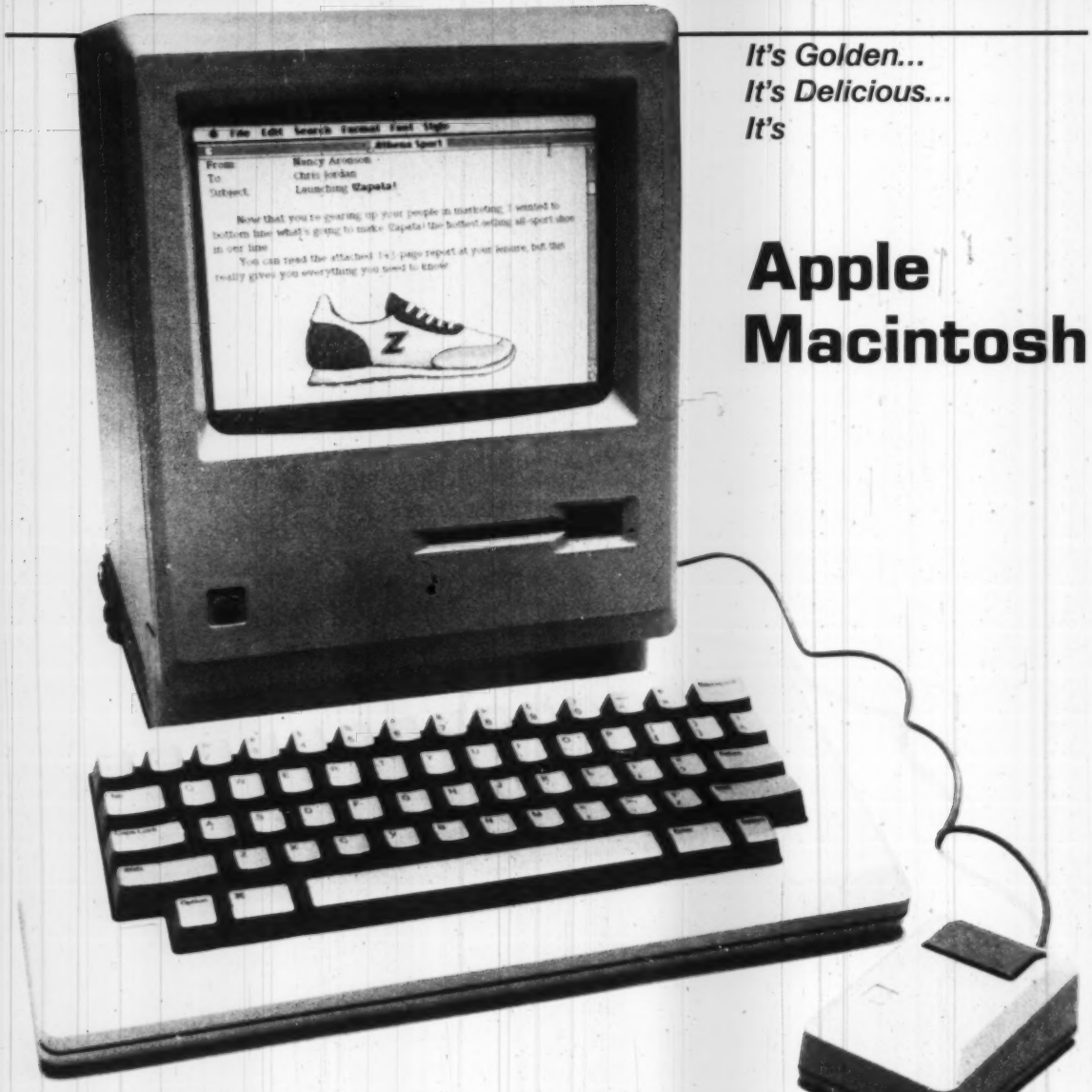
It's Golden...
It's Delicious...
It's

Apple Macintosh



John J. Anderson

After much anticipation and much ado, and alongside an advertising campaign the likes of which have never been seen in the microcomputer industry, Apple has finally done it—the Macintosh computer is a reality.

And it is quite an astonishing reality, indeed.

At $2495, Macintosh represents the cutting edge of Apple's bid to regain lost pre-eminence in the microcomputer field, IBM, which reared its big blue head a mere two years ago, has in that time very nearly pulled the carpet out from under Apple. Now it's all up to Macintosh.

Can the Mac return Apple to the catbird seat? Judge for yourself. Mac is surely cute-looking and packs more punch than any other micro that fits in a rucksack. It is based on the 68000 microprocessor and as such qualifies as the first medium-priced micro with 32-bit architecture. It uses Sony 3.5" hardshell floppies, which are reliable, quiet, durable, and capable of storing 400K per side.

Screen display is monochrome, but graphics resolution is a superlative 512 x 342 pixels. A mouse peripheral is standard, as is a built-in battery-powered CMOS clock/calendar.

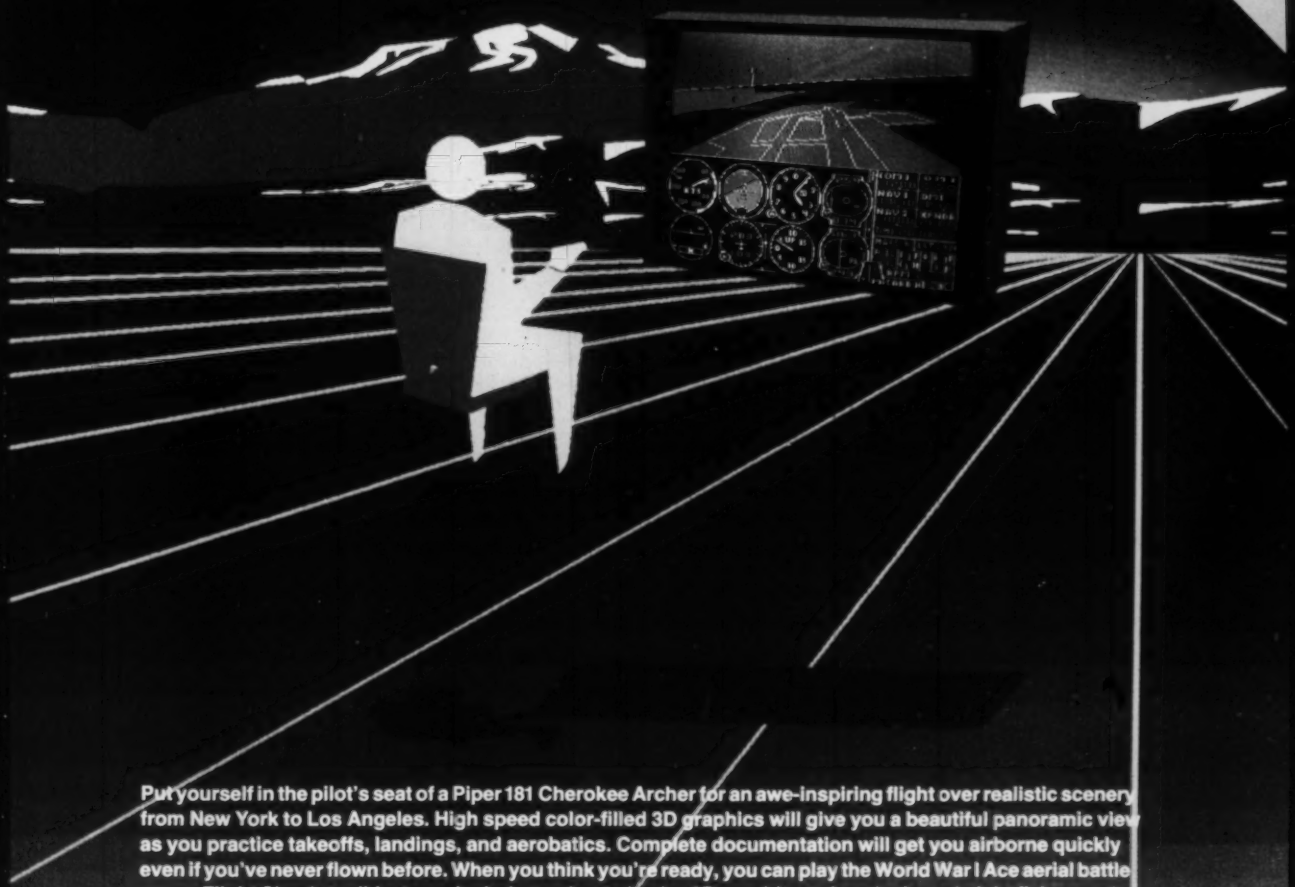
While the Mac comes with 128K RAM standard, which may sound a bit chintzy, it also sports 64K of machine language ROM. Much of the software used to drive the mouse and simulate a "desktop" environment using screen windows already resides in ROM, freeing up RAM for user storage.

And all of this comes to you for a manufacturer's sticker price of $2495. And, for a limited time, this price buys a system complete with bundled word processing and graphics programs for Apple.

Like the ground-breaking Lisa computer, which changed industry standards despite its initially mediocre sales showing, the Mac is designed with ease-of-use foremost in mind. Simply use the mouse to "point" to what you want to do; then press the button on top of the mouse. Breaking in a new software package? Chances are it operates along the same

Flight Simulator II

For Apple, Atari, & Commodore 64



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In systems equipped with a diskette drive, there's a program that lets you explore computer fundamentals at your own pace, with PC*jr* as your teacher.

And to get you off and running from the very first day, a sample diskette with eleven useful mini-programs (ranging from a spreadsheet for monthly expenses to a word game and a recipe file) is also included.

But there are still more surprises.

FAMILY COMPUTING MADE EASY

Many IBM software programs written for other IBM personal computers will run on PC*jr*. And inexpensive new ones written especially for PC*jr* are being released.

An easy-to-use diskette word processing program, for example, uses pictures as well as words to guide you along. A comprehensive IBM home budget program makes keeping track of money easier. There's also a selection of educational programs for children at home and at school.

And when the work is finished (or perhaps before), the fun can begin. Just slip in a game cartridge and stand back.

GROWING UP WITH JUNIOR

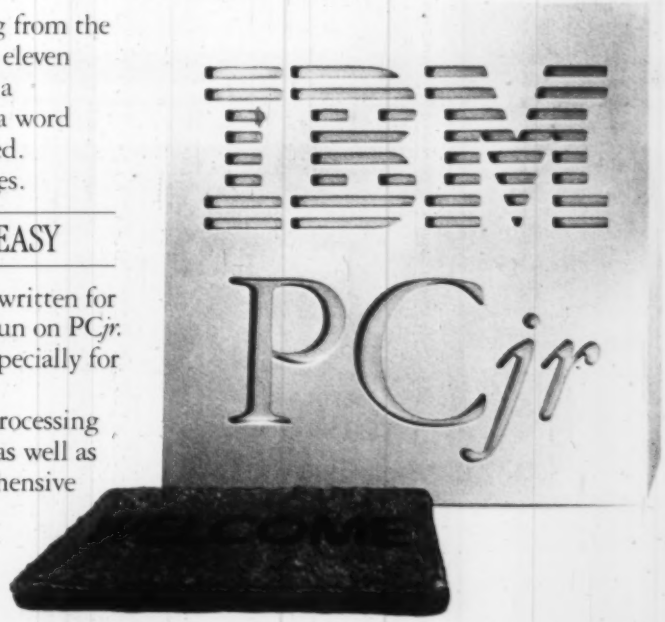
Add a printer. A diskette drive. An internal modem for telecommunications. Increase user memory from 64KB to 128KB. With these and other add-it-yourself options, even the lowest-priced PC*jr* can grow up *real* fast.

PC*jr* is a powerful tool for home, school or college. With its optional carrying case, it's a powerful tool anywhere you care to take it.

SEE JUNIOR RUN

Junior's starting model includes a 64KB cassette/cartridge unit and Freeboard for about $700. A 128KB model with diskette drive is about $1300. (Prices apply at IBM Product Centers. Prices may vary at other stores.)

Your local authorized IBM PC*jr* dealer proudly invites you to see this bright little addition to the family. For the store nearest you, just call 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.



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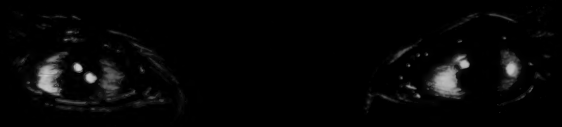

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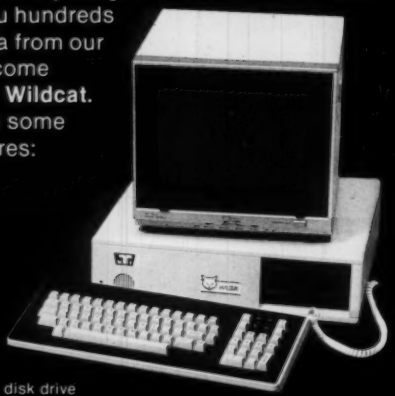
Wildcat is a sleek styled mobile computer designed for your vehicle, boat or aircraft. It looks like an IBM PC™ and is fully software compatible with the Apple II™ product line at a list price that would put a smile on the face of the most frugal computer buyer.

But price isn't everything. All those features that would cost you hundreds of dollars extra from our competitors, come standard with **Wildcat.** Let's compare some of these features:



	Apple IIe	Wildcat
Detachable keyboard	No	STD
Full numeric key pad	Option	STD
Full functions keys	No	41
Built in disk controller	No	STD
Parallel printer port	No	STD
RS 232 serial port	No	STD
Game port	1	2
RGB video out	Option	STD
Composite video	STD	STD
RF video for TV	Option	STD
CP/M	Option	STD
Hi Res graphics (6 color)	STD	STD
Low Res graphics (16 color)	STD	STD
64KB memory	STD	STD
Half high disk drives	No	STD
Converters for vehicles, boats, and aircraft	No	Option
Aluminum carrying case	No	Option
List price	$1940*	$1099.00*

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*Computer plus one disk drive

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CIRCLE 214 ON READER SERVICE CARD

lines as the packages you already know. No longer need you be forced into memorizing numerous and confusing keyboard commands. As a training tool, even critics agree that the mouse is a valuable peripheral.

Universities nationwide have already embarked upon a love affair with the Mac. Twenty-four of the nation's leading colleges have joined the Apple University Consortium and have each pledged to purchase $2 million of Apple products—mainly Macintosh computers—over the next three years. Apple reports over $60 million in commitments to date from colleges and universities.

Any college student seriously interested in microcomputer technology will be attracted to the Mac. Its 68000 processor will not become obsolete quickly, and if you are going to make the supreme effort to learn assembler, you might as well commit to 68000 chip architecture. The Mac's 32-bit processor with 16-bit data bus makes it just about the fastest micro around.

The Mac has a built-in CRT and Sony microdrive and still comes in with a 10 x 10" footprint and under 17 lbs. It is lighter than the best-selling transportable computer. It has four-voice, 12-octave sound synthesis capable of advanced music and speech applications. For $99 you can get the nylon Mac carrying case and join the height of Macfashion.

MAC SPECS

Name: MC68000, 32-bit architecture, 7.8336 MHz clock frequency

Memory: 128K RAM
64K ROM

Disk Capacity: 400K per formatted disk. 3 1/2" diameter, hard-shell media

Screen: 9" diagonal, highres, 512 pixel x .342 pixel bit-mapped display

Interfaces: Synchronous serial keyboard bus. Two RS232/RS422 serial ports, 230.4K baud maximum (up to 8.920 megabit per second if clocked externally)
Mouse interface
External disk interface

Sound Generator: 4-voice sound with 8-bit digital-analog conversion using 22 KHz sampling rate

Other optional peripherals are as follows:

- Imagewriter printer—$595 ($495 if purchased with Macintosh).
- Numeric keypad—$129.
- 300 baud modem—$225.
- 1200 baud modem—$495.
- External microdrive—$495.

It is expected that Macintosh computers will be rather hard to come by at least until this summer, due to heavy backorder demand. Apple's new $20 million automated factory in Fremont, CA, can turn out a Mac every 27 seconds, however. So you should be able to find your own Macintosh computer relatively soon.

As for software, it will be a little slow in coming—at first. However, just about every prominent software manufacturer is developing software for the Mac, and Apple hopes to see at least 500 independent Mac packages by the end of the year. This includes packages from Lotus, Microsoft, and Digital Research.

Conclusions? We'll wait until we can get our sweaty palms on a unit here at the lab. But from what we have already learned, Apple might have a real shot at IBM with its new baby. Mac looks like a winner.

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Wordstar 3.3	$265
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w/out Mouse	call
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CIRCLE 217 ON READER SERVICE CARD

creative computing equipment evaluation

Coleco's Adam

Four Machines In One

Figure 1. The self-contained Adam consists of a memory console with Colecc game-cartridge slot, detached keyboard, daisywheel printer, and two joystick

creative computing
HARDWARE PROFILE

Name: Adam

Type: Family computer

CPU: 8-bit Z80A

RAM: 80K/144K

ROM: Word processor in ROM, Basic on tape

Type of keyboard: QWERTY typewriter keyboard

Text resolution: 24 lines of 36 columns

Graphics resolution: Low resolution 40 x 40; high resolution 256 x 192

Number of colors: 16

Sound capablity: 3 channels

Ports: Expansion port up to 13 additional peripherals

Documentation: 3 manuals; word processing, set up, Basic

Summary: Good for beginners but not for experienced computerists. May be used as word processor.

Manufacturer:
Coleco Industries, Inc.
999 Quaker Ln. South
West Hartford, CT 06110
(203) 278-0280

Stephen B. Gray

Of all the personal computers introduced in 1983, two got much more pre-announcement attention than all the rest. A combination of computer and printer, officially known as Adam, The ColecoVision Family Computer System, caused almost as much commotion as the IBM PCjr. Adam's release date was moved up several times; the list price went up from $600 to $700 to (as of January 1984) $725; there were rumors of mechanical problems and predictions that a toy manufacturer couldn't make or sell a computer.

Adam

How you feel about Adam will depend largely on how much you know about personal computers. If you have had your hands on several, you may find the Basic lacking in comparison with the Basics of some other machines. You will also note that word processing is the best feature of the Adam. But the vast majority of Adam purchasers won't be making such judgments.

Adam is selling like hotcakes at stores such as Toys 'R' Us, mainly to people who have never touched a computer before. For less than $700, they are getting an electronic typewriter, word processor, computer, and game machine, all in one big box. Most will never even try programming in Basic. The few who do will never have seen a Basic manual before, and won't know how much is missing from the Adam Basic manual—even in its second edition.

For those buying an Adam, its main selling points are that it is the latest rage, it is scarce, and it combines four machines for less than the price of many office typewriters.

Positioned as "the first, complete, single-package family computer that includes all necessary hardware and software," Adam is very competitively priced. The system includes an 80K memory console with tape drive, a detached keyboard, and a "letter-quality" daisywheel printer.

Adam has word processing firmware in ROM. Why not Basic also in ROM? As a Coleco salesman put it, "Which will the average person use more often, Basic or word processing?" Also,

CAN YOU NAME THE WORLD'S THIRD LARGEST SUPPLIER OF PERSONAL COMPUTERS?

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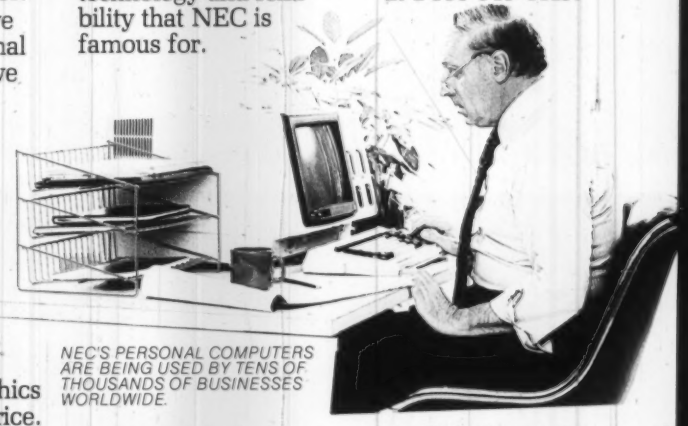

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supplying Basic on tape helps keep the system price down; in ROM it could add $40-50 to the price.

When Adam is first turned on, it is an electronic typewriter, although without any correction facilities. Press the ESCAPE/WP key, and it becomes a word processor. Basic takes less than 70 seconds to load, into about 30K of RAM memory.

The Two Faces Of Adam

Adam is available in two models: the self-contained Family Computer system; and as an add-on expansion module for the ColecoVision video game system. In a pre-Christmas full-page *New York Times* ad, Macy's described Adam at $600 as "the most complete family package ever offered," and priced the add-on module at $500.

The self-contained system (Figure 1) has three components: a memory console with built-in tape drive, a detached keyboard, and a daisywheel printer. The overall exterior design of all three is superior; Adam looks great.

The memory console contains a Z80A microprocessor, and 80K of RAM, expandable to 144K with an optional 64K RAM module. At the right front top is a slot for a ColecoVision game cartridge. The "digital data" cassette tape drive has room beside it for a second tape drive. An RF modulator is built-in for connecting Adam to a TV set; there is also a composite video output for driving a monitor.

The detached keyboard looks better than the IBM PCjr keyboard (the jr was minimized to keep it from eroding sales of its big brother, the IBM PC). The keyboard lends itself to touch typing: the 75 full-travel keys have a slight tactile feedback. When one of the two supplied joystick controllers is placed in its slot at the right of the keyboard, it serves as a numeric keypad, and the joystick can be used to control the cursor.

The keys (Figure 2) include 54 typewriter keys, six multifunction "Smart Keys" numbered I to VI for use in typewriter and word processing modes, five cursor-control keys, eight word processing keys (INSERT, DELETE, STORE/GET, MOVE/COPY, UNDO, etc.), a CONTROL key, and a WILD CARD key (for future expansion).

As an indication of what Coleco thinks users will do with Adam, the key that is called ENTER on many personal computers is called, on the Adam keyboard, RETURN, as on most electric typewriters.

The bidirectional daisywheel printer performs fairly well, at the slow speed of 10.5 characters per second (Coleco prefers to say it prints 120 words a minute), and can even print superscripts and subscripts. The carriage is 9½ inches wide, for single sheets or fanfold paper. The 96-character removable printwheel includes greater-than, less-than, and other Basic programming characters, and can be replaced with other standard 10-pitch printwheels.

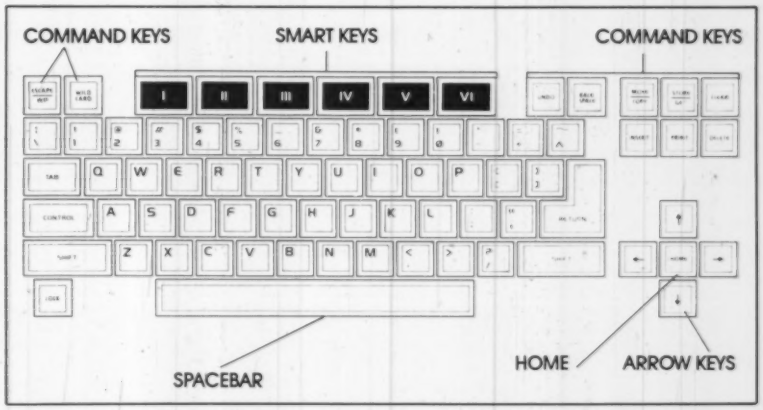

Figure 2. The Adam keyboard has 75 keys, of which eight are devoted to word processing.

The bidirectional daisywheel printer performs fairly well, at the slow speed of 10.5 characters per second.

The printer uses a one-shot multistrike film ribbon cartridge that doesn't print characters as sharply defined as with a single-strike ribbon, which provides a fresh ribbon area for each character. However, single-strike ribbons cost more.

A problem with the ribbon cartridge: it is held in place with a latch. In some Adams, the latch doesn't hold the cartridge down firmly enough. In others, it holds too well, and won't move enough to allow the cartridge to be removed, without having to use something to lever up the latch, and pry out the cartridge. Some Adam owners may find they have pried off the top of the ribbon cartridge instead.

Expansion-Module Adam

For those who already have ColecoVision, Coleco offers Expansion Module 3, which turns the game system into an Adam with keyboard, printer, and memory console (Figure 3). The dif-

Figure 3. For ColecoVision owners, Expansion Module 3 upgrades the game system into an Adam.

ferences are all in the memory console: the expansion version, with 64K of RAM, plugs into ColecoVision, which has its own 16K, for a total of 80K, just like the self-contained version. No game controllers (joysticks) are supplied with the expansion module, since they are part of ColecoVision.

The expansion module memory console has no game cartridge slot, since ColecoVision already has this slot. There is no composite video output, either.

Tape

Adam is supplied with three tapes, called "digital data packs." One is the SmartBasic tape, another is "The Official Buck Rogers Planet of Zoom arcade-quality video game," and the third is a blank tape.

The "digital data pack" looks almost exactly like a Philips audio cassette. The two main differences are: 1) the Adam cassette has two more holes in its clear-plastic shell, to provide what Coleco says is a more exact positioning of the cassette (on steel pins) in the drive; 2) the cassette shell is made of Lexan, which is much stronger than the polystyrene shell used in audio cassettes.

Turn Adam on, and it is an electronic typewriter.

The blank tape isn't really blank; it is a formatted data tape, and is list priced at $6. It stores about ¼ million (256K) bytes, or the equivalent of about 180 double-spaced pages of typed text.

The tape includes a File Directory, which you can call up to see what is stored on the tape.

Could you bore a couple of extra holes in the shell of a regular audio cassette, and use it in the Adam tape drive? Coleco claims their formatted data tape can't be copied. Coelco also says the "digital data pack" is made to their specifications, which have to be much tighter, for the 20-inch-per-second forward and 80-ips rewind speeds, than for standard 1⅞-ips audio cassettes. Trying to use a standard cassette at such high speeds might pull the tape off the hubs, or stretch or break the tape. Besides, boring the two extra holes in an audio cassette could drop plastic shavings or dust into its innards, which could make it quite ill. So pay the $6 that the store charges for "blank" tape.

Electronic Typewriter

Turn Adam on, and it is an electronic typewriter. The display (Figure 4) includes a horizontal scale with margin indicators at the top. The vertical margin scale shown in the figure is actually only in the word processing display.

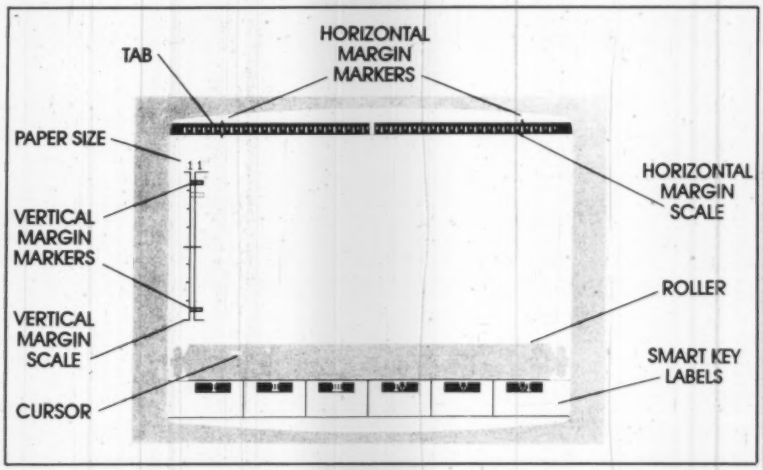

Figure 4. As you type on the keyboard, characters appear on the screen "roller" at the same time they are being printed.

Just above the Smart Key labels is what looks like a typewriter platen. As you type, words appear on this, and eventually move up into the space above this "roller," as it is called.

The Adam electronic typewriter takes a while to get used to. You can't watch the paper as you type, because the characters are concealed behind the ribbon. So you have to watch the screen, which is difficult at first. And you have to be careful, near the end of a line, not to start a word that won't fit, just as with a manual typewriter.

The print quality is fairly good, although on most Adam printers the characters are tilted a few degrees clockwise (Figure 5). Apparently the typewheel isn't held perfectly perpendicular when the solenoid hits the character "petal." This isn't all that bad for most typing, although you might not want to type a resume or an important letter with this printer. However, for under $700 for the whole shootin' match, would you expect perfect printing?

Word Processor

Press the ESCAPE/WP key at the top left of the keyboard to put Adam into SmartWriter word processing mode. Most of the screen remains the same, except that the vertical margin scale appears, and now all six Smart Key labels turn on, for MARGIN/TAB/ETC, SCREEN OPTIONS, SEARCH, HI-LITE, HI-LITE ERASE, and SUPER/SUBSCRIPT (Figure 6).

As before, when you type, the characters appear on the black roller, and the

```
Fourscore and seven
years ago our fathers
brought forth on this
continent a new nation,
conceived in liberty
and dedicated to the
proposition that all
men are created equal.
```

Figure 5. The Adam printer works quite well, and produces fairly good type.

lines move up into the center area. But now you don't have to worry about the end of the lines, because you don't have to press the RETURN key until you get to the end of the paragraph. As the manual says, "Did you notice that the computer automatically moved words that didn't fit at the end of one line to the beginning of the next line? This 'wrap-around' feature makes typing easy and fast."

SmartWriter has got to be the most user-friendly word processing program in town.

SmartWriter has got to be the most user-friendly word processing program in town. It is interactive, completely menu-driven, and uses both vertical and horizontal indicators to show the line and column locations of the cursor.

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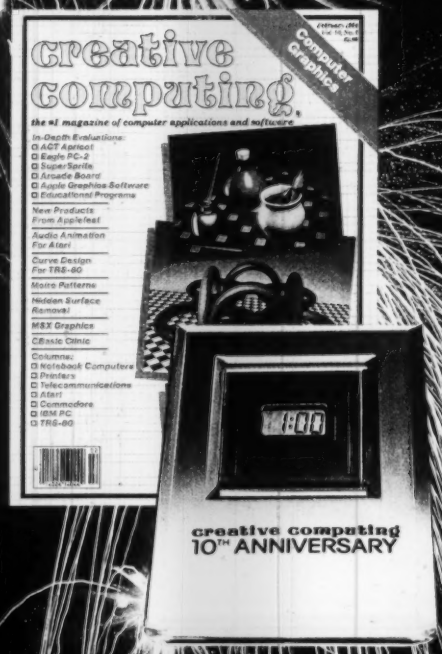

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Figure 6. The six Smart Key labels at the bottom of the WP screen correspond to Smart keys I-VI at the top of the keyboard.

Thirteen keys are dedicated to the word processing function (the six WP keys, the six Smart Keys, and the UNDO key).

A total of more than 80 Smart Key labels, on three levels of menus, is displayed at the bottom of the screen. Some are accompanied by messages, of which there are nearly two dozen.

For example, Smart Key label I on the screen is for MARGIN/TAB,ETC. Press the I at the top of the keyboard, and you get a new menu line, with six new Smart Key labels: TYPE OF PAPER, HORIZ MARGIN, VERT MARGIN, TAB, LINE SPACING, END PAGE.

Press the I key, and a third menu appears with four more labels: LETTER 11, LEGAL 14, TO: VERT MARGIN, DONE. Press key III to let Adam know you will be using 11-inch paper, and the message at the lower left of the screen says

PAPER
LETTER

Pressing key VI when you are DONE gets you back to the main menu.

Like Apple Basic, SmartBasic looks at each line as you enter it, and displays error messages right away.

What with all these menus and messages, you barely need the manual. Using only the six Smart Keys, I to VI, you can enter the paper length, set horizontal and vertical margins, set tabs, set line spacing, select the background color, turn off (or set at half-volume) the beeps that indicate various events (such as nearing the end of the workspace), search for text to be inspected or changed, replace text found as a result of the search, "hi-lite" text (with an underline in red) if you want to copy or move or delete or print it, and specify subscripts or superscripts.

Using the six dedicated keys at the top right of the keyboard, you can MOVE text from one location to another, STORE text on tape, or GET it from tape, CLEAR all or part of the screen, INSERT new text, PRINT text, or DELETE a letter or word or line or paragraph from the text. Each of the six keys calls up one or more levels of menus at the bottom of the screen.

If the user changes his mind, the UNDO key automatically returns the text to its original state.

The word processing manual is fairly good, with many drawings and photos to show the correspondence between individual keys and what functions they perform. However, my copy has quite a few paste-overs, which indicate the manual was being written while Adam was still being designed. Even with the paste-overs, the manual still doesn't reflect the final design, which perhaps will be delineated in a later edition of the manual.

The heavy-paper SmartWriter Easy Reference Guide is excellent, written for a fast lookup of features and functions.

The biggest appeal of Adam to users is likely to be its word processing capabilities. It is easier to use than the electronic typewriter, since you can type as fast as you want, and then make your corrections, without having to worry about hitting the right key every time. This will be the first exposure to word processing for the majority of users, and if it succeeds at nothing else, Adam may eventually bring many people into the commercial WP world.

Basic

Turn Adam off, put the SmartBasic tape into the drive, turn Adam back on, and the computer automatically reads the tape (at 20 inches per second), rewinds a couple of times (at 80 ips), and within 70 seconds puts this on the screen

Coleco SmartBASIC V1.0

although several tries are often required before the Basic loads.

SmartBasic is similar to Apple Basic, and has most of the usual Basic commands, statements, and functions. There are some differences; those who like the ease of PRINT AT will have to make do with a combination of HTAB and VTAB, for example. However, you can write a simple program that converts HTAB/VTAB to the equivalent of PRINT AT, if you prefer the latter.

Like Apple Basic, SmartBasic looks at each line as you enter it, and displays error messages right away, rather than when you try to run the program. Type

100 PRINT "HELLO

press the RETURN key, and the screen shows

'"' EXPECTED

with an up-arrow pointing to the space after HELLO.

Programs stored on tape are listed out by CATALOG command. SAVE a program twice on tape under the same name, and one will be kept in a backup file. So if you erase the first by mistake, you still have the backup copy, which you can access with RECOVER.

SmartBasic has no edit mode as in TRS-80 Basic, with various single-letter commands for changing, inserting, or deleting characters, etc. You edit with the left and right arrow keys, as in Apple Basic: backspace to the wrong character, retype it, space to the end of the line, hit RETURN. It is not as elegant nor as powerful as an edit mode, but it doesn't require learning any edit commands.

The graphics are similar to Apple graphics. In lo-res mode, the graphics area is 40 pixels wide, 40 high. Horizontal and vertical lines are created with HLIN and VLIN. One of 16 colors is selected with COLOR=; individual pixels are turned on with PLOT, and SCRN identifies the color of a pixel at a particular location.

In hi-res graphics, the graphics area is 256 x 160, or 256 x 192 pixels, depending on whether you chose HGR or HGR2 mode. Hi-res also has 16 colors, but some are different from the lo-res colors. HPLOT in hi-res permits not only turning on individual piexels, but also drawing a line between any two pixel locations. Several lines can be drawn with only one HPLOT statement, such as

130 HPLOT 0,0 TO 255,0 TO
255,159 TO 0,159 TO 0,0

which outlines the HGR graphics area.

Hi-res graphics shapes can be rotated with ROT and made larger or smaller with SCALE.

Hi-res graphics shapes can be rotated with ROT and made larger or smaller with SCALE. Several "default" shapes

can be called up from memory with DRAW, for examining the effects of ROT and SCALE, although the manual says practically nothing about this. Actually, using ROT and SCALE, you can create animated graphics, and if you photograph each screen with a movie camera frame or two, you have an animated cartoon.

The manual also says nothing about the existence of trig functions SIN, COS, TAN, and ATN, as well as LOG, EXP, RIGHT$, AND, OR, NOT, and several other functions. Nor is there a word about shape tables.

The second edition of the "Simple Guide to SmartBasic" is almost as bad as the first. A few corrections are made to the original text, and the missing functions and statements are added. However, there are still many problems. The manual is poorly designed, with headings in the same typeface as the text, so it is difficult to look up anything quickly. Several functions (such as USR and CALL) have no examples of usage; there is no Test Program or Sample Run for these. Many little problem areas haven't been cleaned up; for example, there is still no differentiation between DEL (wich deletes program lines) and DELETE (which deletes stored programs from tape).

The biggest difference is the addition of new material at the end of the second edition. The Advanced Reference Section includes the trig functions, HIMEM (with the note WARNING: FOR EXPERTS ONLY!), POKE (same warning), PEEK (same warning, even though the text says that with PEEK you are "just looking"), etc.

An added Compendium of Useful Programming Information provides error messages, backups (under "Guarding Against Apoplexy"), text files, and ASCII character codes. But not all of the Adam ASCII characters are given, such as the inverse characters, playing-card suits, musical notes, game shapes, etc.

There is nothing to show how to use Basic for anything useful.

Also added are a simplified memory map, glossary, and five pages on shape tables. This last item is especially complicated. Not only is the information scanty; some of it is wrong. Although maybe only one out of a hundred Adam users will get into Basic, and only one out of a thousand will get as far as shape tables, when he gets there, he will give up after an hour or two, if not sooner.

The manual concentrates on the basics of Basic, with 97 of its 131 tutorial pages (in the first edition) devoted to nothing more strenuous than DATA/READ and FOR/NEXT. Perhaps that is as it should be, since it does provide a taste of Basic, which is no more than what the majority of Adam users are interested in anyway. However, a great deal of space is taken up with PRINT, using mostly trivial examples, and with silliness such as "10 GOTO 10—This program tortures the computer." There is nothing to show how to use Basic for anything useful, beyond translating a few words from English into French, creating some guessing games and a simple checkbook balancing program, and converting Fahrenheit to centigrade.

A third edition (which I have not yet seen) is said to be a completely rewritten SmartBasic manual.

Incidentally, according to Coleco, SuperBasic is AppleSoft source code compatible; Adam will run Apple Basic programs as long as they don't contain PEEK, POKE, or CONTROL/D.

Benchmark Test Results and View of a New Owner

Since the November issue, we have been running a page of benchmark test results and inviting readers to submit the results for computers not in the table. We have gotten several on the Adam, and it stacks up very well against other machines in its class (see table).

The Adam has about the same computational speed as the TRS-80 Model 4, a much more expensive machine, and is more than twice as fast as its arch rival, the Commodore 64. Basic on the Adam is considerably more accurate than on those machines also. The only low priced machine to out-perform the Adam on both speed and accuracy is the Acorn BBC Computer, a strong contender in Britain, not yet widely available on these shores.

The letters from readers were revealing in other ways. John Butler of Virginia Beach wrote: "I have had my problems. I had to send it (the Adam) in for repair after only four days—the tape reader wouldn't. They fixed it and then the word processing software fouled up. Then it ate my Basic tape. So they sent me another computer. Now I have two computers, neither one of which seems able to process words very well (they 'blow up' on letters of more than one page).

"Despite my problems, however, I do like the system. I am a programmer and can manage—barely. Additional comments: Documentation—extremely poor, all around. Software—non-existent. Peripherals—non-existent. Information from company—sketchy, at best. Service—very courteous, very fast (now, if they could only *fix* it...).

"Sorry for the very brief format of the above—I can't write two-page letters."

This seems to be indicative of the experience of other owners to whom we have talked: many problems, in large part the result of the poor documentation, but they like their systems.

Coleco is reported to be working on the documentation—as well they might. They also announced several new peripherals at the Winter Consumer Electronics Show, although when we will see them on dealer shelves is anybody's guess. Major third party software vendors seem to be taking a wait-and-see attitude and not immediately jumping into the Adam market, so the software situation is not likely to improve for some time. —*DHA*

Table 1. Speed and accuracy of selected computers.

Computer	Speed	Accuracy (Lower is better)
Acorn BBC Computer	0:21	.0000128746033
Coleco Adam	0:47	.000426292419
TRS-80 Model 4	0:53	.0670776
Commodore 64	1:53	.0010414235

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Memory Console

The memory console has room inside for adding another tape drive, and there are three connectors for expansion modules. A trapdoor at the right end, marked

EXPANSION MODULE INTERFACE

conceals the end of a PC board, waiting for an edge connector to be pushed onto it. According to the literature, up to 13 additional peripherals can be connected via the expansion port.

At the rear are two RCA-type plugs, for connecting to a TV set and to a monitor, and a DIN plug for AUX VIDEO.

Printer

To manufacture a combination of computer and printer for a list price around $700, Coleco had to cut a few corners, such as:

- The printer uses a stepping motor to spin the daisywheel, rather than a servo. With a servo, the petals spin at high speed, and one is struck almost in flight, as the daisywheel stops momentarily. There is nothing wrong with using a stepping motor, which seems to be spinning the daisywheel, but it is actually turning it a petal at a time.
- The printer uses a solenoid to move the printhead mechanism across the paper, rather than a stepping motor. Again, there is nothing wrong with this, but it is slower.

By stepping down a notch in printer technology, Coleco saved money. Stepping motors are cheaper than servos, and solenoids are cheaper than stepping motors.

Nobody at the 800 number knew anything about sprites.

Another cut corner: instead of a common bus to which the major components are connected, Adam daisychains them. The keyboard connects to the memory console, which connects to the printer, which is plugged into the wall. Which means that if any component has a glitch, the whole system can go down.

The printer houses the power supply.

$$\log_{10} x = a_1 t + a_3 t^3 + e(x)$$

Figure 7. The Adam printer can handle superscripts and subscripts.

After some users reported that tapes left on top of the printer wouldn't load any more, Coleco is said to be putting a sticker on the printer, warning against leaving anything at all on it other than paper. A similar sticker warns against leaving a tape in the drive when turning Adam off.

The connectors between the computer and printer are non-standard; the printer can't be used with any other computer, nor can the computer drive any other printer; Coleco calls it a "dedicated system."

Service

An 800 number in the Adam manuals is for Coelco's toll-free service hotline. It is almost always busy; one reason is that the same number is given to the one and a half million ColecoVision owners. Not only do they call with questions about

Who Is Russ Walter And Why Is His Name In (And Out Of) The Adam Manual?

As originally printed, the first edition of Coleco's Adam SmartBasic manual contained a three-page "Forward" (is this sloppy spelling, or meant to be more meaningful than Foreword?). It informs the reader that, among other things, "This manual has been adapted from a book by a computer wizard named Russ Walter. His book, *The Secret Guide to Computers*, has been well-received by the public at large and has the enviable track record of being one of the must successful teaching documents on programming today."

After several paragraphs on how SmartBasic is different from all other Basics, etc., this advice is offered. "For more information about programming and computers, get the complete *Secret Guide to Computers* (which is about 10 times as large as the manual you are reading now). To get free information about the complete *Guide*, as well as an order form, send a post card to: Russ Walter, 92 Saint Botolph St., Boston, MA 02116."

Then the Coleco 800 hotline number is given. The last paragraph of the Forward says, "Or, if our line is busy, you can reach Russ Walter at (617) 266-8128 if you have programming questions. You can call him 24 hours a day: he's almost always in, and he sleeps only lightly. Since he's busy running his publishing company, be brief. After saying where you bought your Adam and how you got his phone number, give a one-sentence summary of your question."

Why The Secret Guide

How Walter's book became the basis for the Adam manual is a story in itself. Originally, Coleco signed the Robert J. Brady Company (a subsidiary of Prentice-Hall) to write and print all three Adam manuals.

Coleco approved the word processing and operations manuals, but not the Basic manual, which was said to contain too many errors. Rather than edit the Brady book, Coleco and Brady decided it was easier to start all over again, from scratch. A Coleco executive's wife had used Walter's book in a course she took and apparently recommended it. Coleco decided to use the Walter book and to rework it in-house.

Why is Walter willing to answer any and all phone calls about Adam? For one thing, the mention of his *Secret Guide* in the Adam manual is the only advertising the *Guide* gets, other than word-of-mouth. Walter gave Coleco a "low rate" on the right to rework his material, on a contractual understanding that his name and address were to be in the manual, to help sell the *Secret Guide*. "They used a tiny part of an obsolete edition of the *Secret Guide*, and did a bad job of rewriting it," says Walter.

Walter, who has been described in print as Boston's (and New England's) computer guru, is both author and publisher of the *Secret Guide*, and also gives occasional intensive one- or two-day computer courses. He has a van containing 30 computers of all kinds, which he drives to the course location. The charge for a 10-hour course is about $29. Walter invites attendees to call him if they need any help with computers.

Comments On Adam

Coleco began shipping the Adam on or about October 18, 1983. Walter got his

System Saver® didn't become the Apple's number one selling* peripheral by being just a fan.

What made over 100,000 Apple® owners fall in love with System Saver? The answer is simple. It's the most versatile, most convenient, most useful peripheral ever made for the Apple.

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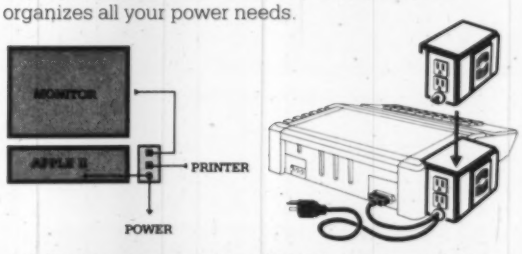
System Saver makes your Apple more convenient to use.

No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.

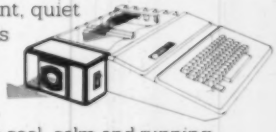


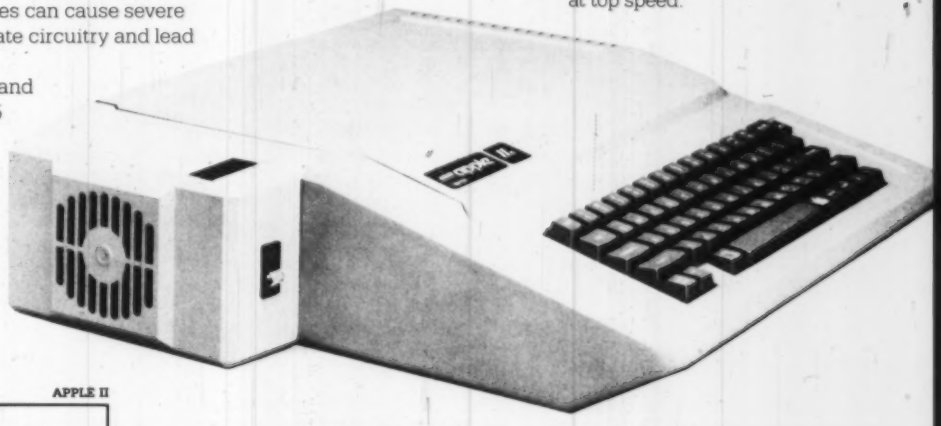
It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.

Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.





So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand

Please send _____SYSTEM SAVER(S). $89.95 each. Total $_____

Include $2.50 for shipping and handling.
New York State residents add applicable sales tax.

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KENSINGTON™ MICROWARE

*Softsel Computer Products Hot List. **PC Magazine: March 1983.

System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Available in 220/240 Volts, 50/60 Hz.

System Saver is a registered trademark of Kensington Microware Ltd.
© 1983 Kensington Microware Ltd. System Saver is patent pending.

CIRCLE 170 ON READER SERVICE CARD

their game system, but they (and others) call to ask questions like these: What is Adam? What can Adam do for me? Where can I get one?

Not only that, but the "Adam computer operators," as Coleco calls them, were just beginning to learn the Adam when I was able to get through to them some months ago. When I asked one of the operators how to use the three sound channels mentioned in one of the Adam brochures ("five-octave range, plus a white-noise source"), I was told to use PEEK and POKE. Another operator said "that feature hasn't been implemented yet." By now I'm sure they know about sound, but it will certainly be a while before they understand all about shape tables.

By the way, the brochure also says Adam has 32 sprites for graphics, but nobody at the 800 number knew anything about sprites when I called. But give them time, and they will compile a list of answers to the most common questions. Right now I have several the "Adam computer operators" can't answer, and so far Coleco hasn't designated an official question-answerer for authors of books or articles on Adam. For one thing, they are up to their eyeballs with questions and problems concerning another hit Coleco product, the Cabbage Patch dolls.

Game Playing

ColecoVision's Expansion Module 1 permits playing Atari 2600 VCS-compatible game cartridges, including games by Atari, Activision, Imagic, Parker Brothers, and others. Expansion Module 2 provides a steering wheel, floor-operated accelerator pedal, and a *Turbo* game cartridge.

The hardware looks as good as the IBM PCjr; the keyboard looks even better.

Future Expansion

According to Coleco, these will be available in 1984: an additional digital data drive; a combination 80-column display, disk controller, and floppy disk drive; RS-232 serial interface; tractor feed for fanfold paper; clock/calendar card; electronic sketchpad; telephone modem.

The Bottom Line

The price of Adam is low enough so Coleco should capture a good share of the low-end market—if they can make enough of them and supply enough follow-on software. Atari and Commodore are both rumored to be planning computer/printer combinations, and others will join in if Adam even begins to look successful.

The hardware looks as good as the IBM PCjr; the keyboard looks even better. The printer, although slow and loud, is more than adequate for most home applications.

This combination of computer, printer, and arcade game machine is unique and, along with its under-$700 price, should make Adam a real winner, if Coleco can keep up with the demand. ENS

CIRCLE 404 ON READER SERVICE CARD

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first Adam call some nine or ten days later, and the number rose steadily to several dozen each day, for a total of about 400 in 1983. He kept track of the calls, and found that about 75 percent of the calls were from people who said, "My Adam doesn't work," and of those, about 75 percent said they couldn't load the Basic tape.

When people call, Walter says, he answers their questions, and comments on Adam only if asked what he thinks about it. In that case, he says he doesn't like it, but insists he's "not entirely negative" about Adam.

Some of Walter's comments got into the *Wall Street Journal*, and in the *Philadelphia Inquirer*. The *WSJ* left out several "ifs," says Walter, such as "...if Coleco doesn't provide more software and customer support, *then* they could have problems."

According to the *Philadelphia Inquirer*, when owners of an Adam have problems and can't get help from the instruction manual, they call "a Boston computer expert," Walter, who answers their questions, and then adds something to the effect that "I don't recommend buying the Adam, because the unit you buy may not work." Not so, says Walter; he answers their questions and says nothing about the Adam unless asked directly.

The number of phone calls began to fall off around the beginning of December 1983, and Walter says he discovered Coleco had been removing the Forward from the SmartBasic manual. He threatened to sue, because his contract calls for his *Secret Guide* to be mentioned in the manual. Coleco later offered, he said, to settle out of court, by paying him $20,000 for not saying anything derogatory about Adam anymore and for leaving his name out of the manual.

Walter says he didn't write any of the Forward, except for a sentence or two in one technical paragraph.

Coleco Responds

When asked about the company's agreement with Walter, Barbara Wruck, director of corporate communications at Coleco, acknowledged that there had been an agreement, but said that she did not know the details. She said that the manual has been rewritten and mention of Walter's book dropped because "we found that the book (the original manual) was inadequate and not appropriate."

Regarding the phone calls, she said "Russ positioned himself as a spokesman for Coleco," a role Coleco never intended him to play. "He was not knowledgeable in the areas he was speaking about," she added.

When asked about rumours of an impending lawsuit, Wruck reported that "there have been differences, but those differences have been resolved amicably."

Other Computers

Walter also gets calls on the Radio Shack TRS-80, IBM PC, and other computers. His *Secret Guide* was originally published in six thin volumes (reviewed here at length in October 1979, pages 189-190: "All in all, despite a certain degree of childishness here and there, these six publications do seem worth the money. As for content, they don't stand up against various hardcover texts, but few if any of the hardcover books get into some of the areas covered here. They can be recommended for the beginner who wants a basic understanding.").

The *Secret Guide* was later expanded to eight volumes and is now in two large volumes, one of which is coming out in a new edition. They are $14 each, $28 the pair.

According to the calls, half the Adams shipped don't work. There is usually a minor problem, such as the printer ribbon not working, or the Basic not loading. "It is usually some tiny thing that blows in the first three days," Walter says.

Walter reports on experience with the Coleco 800 hotline number: if a customer calls about a bad SmartBasic tape, he is likely to be told, "Just keep trying and it will work." Or, "It is just like the Apple so get an Apple book." —*SBG*

RUN "TAXES"

I/O ERROR

Disk Media Error

A Modern Day Fable.

Once upon a time there was a very diligent man, Jack. Every year the man promised his very faithful wife that he would keep accurate records to make tax time more bearable.

One sunny day, Jack traded in his family cow for a new computer. That starry night, he began to enter all of his tax records onto disk. "How easy and accurate this will be," he stated.

The months went by. Tax time approached. Confidently, Jack inserted his data file and entered "Run Taxes." "Just watch," he said to his wife. But alas. His CRT, as if it were alive, proclaimed, "I/O ERROR." "Gads," he stammered in frustration. "Oh my," said his wife.

Then entered his neighbor carrying three beans, a golden lyre and the new Discwasher® Clean Runner™ Interactive Drive Cleaner. The good neighbor told Jack, "Preventive maintenance will destroy dirt in the disk drive and keep it running clean."

The good neighbor promptly inserted the Clean Runner Interactive Drive Cleaner into the drive and cleaned the read/write heads for Jack. Saying "Bye," he left to tend to his garden. Diligent Jack then proceeded to run his tax data and this time all went well.

The moral of the story, Discwasher Clean Runner is a disk of prevention for a bit of frustration.

The End.

Not all endings are that happy. A dirty read/write head can cost not only many hours of time but also the loss of valuable data.

- *Discwasher® Clean Runner™ Interactive Drive Cleaner is one disk that contains both the program software and the cleaning surface. There is no program to enter.*
- *Clean Runner is an interactive system. It responds to your individual entries as it leads you step-by-step through the cleaning process.*
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A Disk Of Prevention For A Bit Of Frustration

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CIRCLE 137 ON READER SERVICE CARD

Introducing Macintosh. What makes it tick. And talk.

Well, to begin with, 110 volts of alternating current.

Secondly, some of the hottest hardware to come down the pike in the last 3 years.

The garden variety 16-bit 8088 microprocessor.

Macintosh's 32-bit MC68000 microprocessor.

Some hard facts may be in order at this point:

Macintosh's brain is the same blindingly-fast 32-bit microprocessor we gave our other brainchild, the Lisa™ Personal Computer. Far more powerful than the 16-bit 8088 found in current-generation computers.

Its heart is the same Lisa Technology of windows, pull-down menus, mouse commands and icons. All of which make that 32-bit power far more useful by making the Macintosh™ Personal Computer far easier to use than current generation computers. In fact, if you can point without hurting yourself, you can use it.

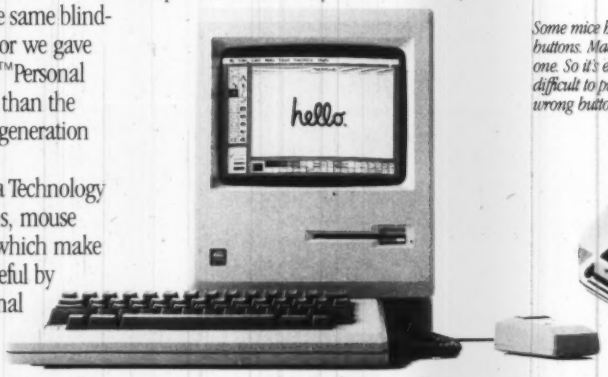
Now for some small talk.

Thanks to its size, if you can't bring the problem to a Macintosh, you can always bring a Macintosh to the problem. (It weighs 9 pounds less than the most popular "portable.")

Another miracle of miniaturization is Macintosh's built-in 3½" drive. Its disks store 400K—more than conventional 5¼" floppies. So while they're big enough to hold a desk full of work, they're small enough to fit in a shirt pocket. And, they're totally encased in a rigid plastic so they're totally protected.

And talk about programming.

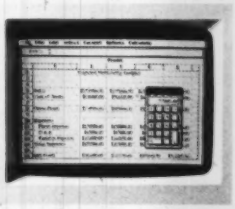
There are already plenty of programs to keep a Macintosh busy. Like MacPaint,™



a program that, for the first time, lets a personal computer produce virtually any image the human hand can create. There's more software on the way from developers like Microsoft,® Lotus,™ and Software Publishing Corp., to mention a few.

Macintosh automatically makes room for your illustrations in the text.

MacPaint produces virtually any image the human hand can create.



Microsoft's Multiplan for Macintosh.

And with Macintosh BASIC, Macintosh Pascal and our Macintosh Toolbox for writing your own mouse-driven programs, you, too, could make big bucks in your spare time.

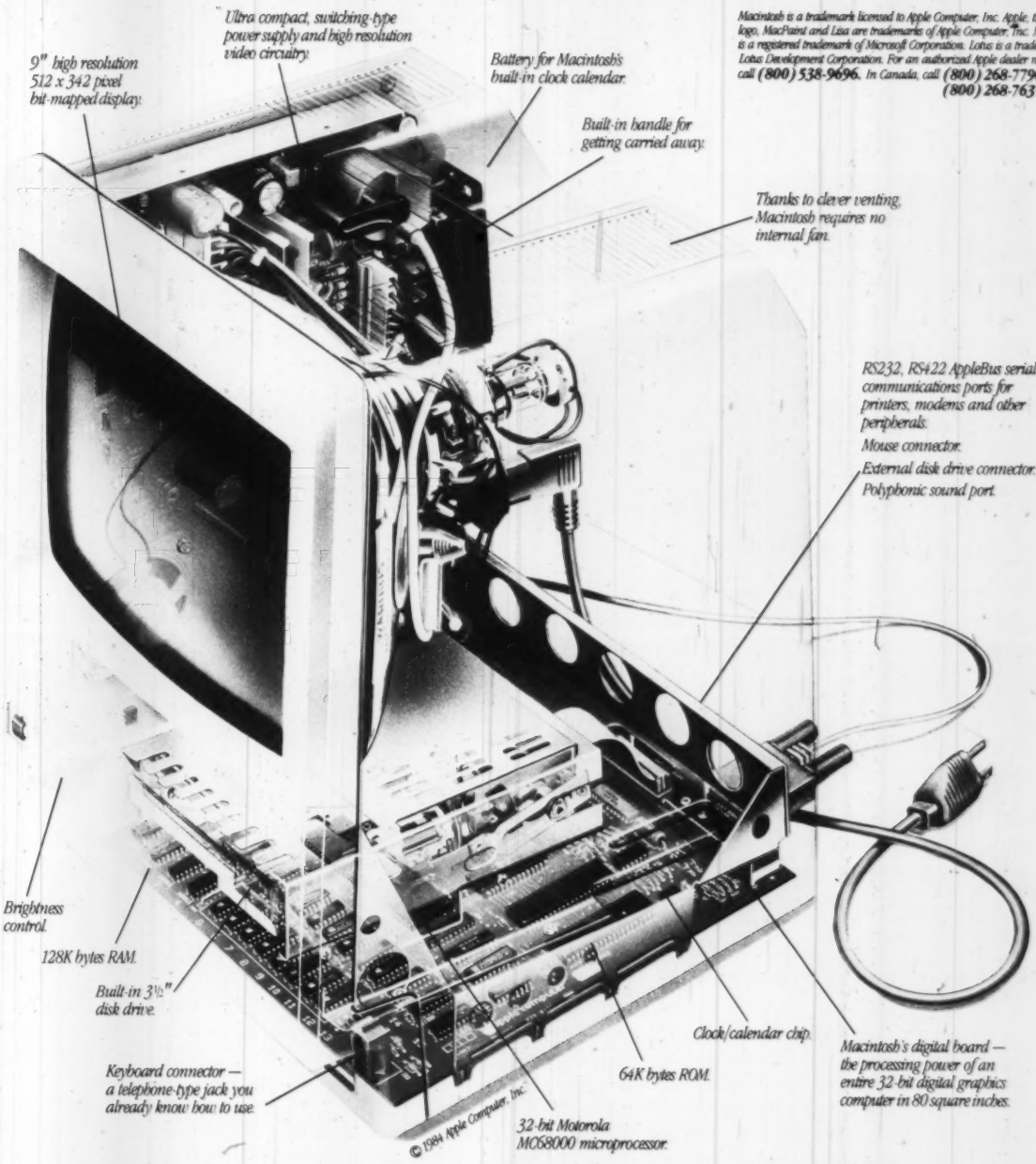
You can even program Macintosh to talk in other languages, like Yiddish or Serbo-Croation, because it has a built-in polyphonic sound generator capable of producing high quality speech or music.

The Mouse itself. Replaces typed-in computer commands with a form of communication you already understand—pointing.
Some mice have two buttons. Macintosh has one. So it's extremely difficult to push the wrong button.
The inside story—a rotating ball and optical sensors translate movements of the mouse to Macintosh's screen pointer with pin-point accuracy.

All the right connections.

On the back of the machine, you'll find built-in RS232 and RS422 AppleBus serial communication ports. Which means you can connect printers, modems and other peripherals without adding $150 cards. It also means that Macintosh is ready to hook in to a local area network. (With AppleBus, you will be able to interconnect up to 16 different Apple computers and peripherals.)

Should you wish to double Macintosh's storage with an external disk


9" high resolution 512 x 342 pixel bit-mapped display.
Ultra compact, switching-type power supply and high resolution video circuitry.
Battery for Macintosh's built-in clock calendar.
Built-in handle for getting carried away.
Thanks to clever venting, Macintosh requires no internal fan.
RS232, RS422 AppleBus serial communications ports for printers, modems and other peripherals.
Mouse connector.
External disk drive connector.
Polyphonic sound port.
Brightness control.
128K bytes RAM.
Built-in 3½" disk drive.
Keyboard connector — a telephone-type jack you already know how to use.
© 1984 Apple Computer, Inc.
32-bit Motorola MC68000 microprocessor.
64K bytes ROM.
Clock/calendar chip.
Macintosh's digital board — the processing power of an entire 32-bit digital graphics computer in 80 square inches.

Macintosh is a trademark licensed to Apple Computer, Inc. Apple, the Apple logo, MacPaint and Lisa are trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. Lotus is a trademark of Lotus Development Corporation. For an authorized Apple dealer near you call (800) 538-9696. In Canada, call (800) 268-7796 or (800) 268-7637.

drive, you can do so without paying for a disk controller card—that connector's built-in, too.

There's also a built-in connector for Macintosh's mouse, a feature that costs up to $300 on computers that can't even run mouse-controlled software.

One last pointer.

Now that you've seen some of the logic, the technology, the engineering genius and the software wizardry that separates Macintosh from conventional computers, we'd like to point you in the direction of your nearest authorized Apple dealer.

Over 1500 of them are eagerly waiting to put a mouse in your hand. As one point-and-click makes perfectly clear, the real genius of Macintosh isn't its 32-bit Lisa Technology, or its 3½" floppy disks, or its serial ports, or its software, or its polyphonic sound generator.

The real genius is that you don't have to be a genius to use a Macintosh.

You just have to be smart enough to buy one.

Soon there'll be just two kinds of people.
Those who use computers. And those who use Apples.

In today's business world, you're not going anywhere until you get Knoware INC

THE KNOWLEDGE COMPANY

Knoware™

Knoware teaches you to use a personal computer—in no time! Knoware gives you software programs you can use—all the time!

Available on Apple® II + and IIe. 64k IBM® PC and XT. DOS 1.1 or 2.0. 128k color graphics.

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Knoware combines a unique educational experience with intriguing entertainment. Thanks to its friendly format, you'll finally be able to say with confidence, "Now, I can really use my personal computer."

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Spreadsheet — **Individual Retirement Account Planner**
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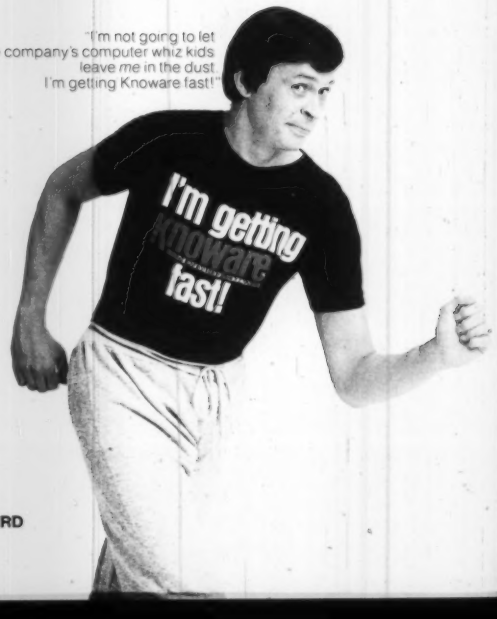
Text Editor — **Calendar**
Pie and Bar Graphs — **Metric to English Measurement Conversion**

Knoware is where to go first.
If you own a personal computer or are thinking of buying one, get Knoware...fast! And start profiting from personal computers.

"I'm not going to let the company's computer whiz kids leave *me* in the dust. I'm getting Knoware fast!"



CIRCLE 160 ON READER SERVICE CARD

creative computing software evaluation

Education Or Entertainment?

Betsy Staples

In our travels over the educational software landscape, we occasionally stumble upon outcrops that don't quite seem to belong in the category but still carry the label. Quiz games, for example, are classified as educational by some manufacturers and entertainment by others. Where do they really belong? To find out, we took an in-depth look at five quiz games from leading manufacturers.

Before we reveal our conclusions, however, a few words about educational software in general are in order. Educational software tends to fall into one of four categories. The first is tutorial. Good packages in this category impart facts and, in some small sense, assume the role of a teacher. They cover a broad range of topics from how to punctuate a sentence to how to use a micrometer. Effective programs of this sort, although becoming more plentiful, are still few and far between.

The second category is the one in which most currently available educational programs fall: drill and practice. These programs assume that the user has already been exposed to the principles being practiced and provide exercises to reinforce the concepts. Some drill and practice programs provide just a series of questions while others furnish remedial paths and tutorial information on concepts with which the user is having trouble. We have reviewed many fine programs in the drill and practice category.

The third category is simulations. Programs in this category simulate everything from a malaria infestation to a town council meeting. They give users the opportunity to ask the all important "what if?" questions and foster the idea of learning by discovery.

The fourth category may loosely be described as supplemental programs. These may do statistical calculations or provide help in gathering data for a lab experiment. In this category, the computer is being used as a tool in the learning process.

Where, then, do quiz programs fit in? They neither teach, drill, nor simulate; they simply reward the person who has mastered a bit of knowledge.

Quiz games are classified as educational by some manufacturers and entertainment by others.

Some packages offer the added challenge of locating the answer to a question concentration-style. Now when we were children, we played concentration with playing cards, and we had many, many hours of fun doing so, but we don't remember ever being told that the game was educational. So, that feature in itself cannot qualify a program to wear the educational label.

Other programs have a time limit that increases the pressure on the player, but certainly does not cause him to learn anything.

After many hours of play, we came to the conclusion that quiz games are just that—play. To some it may seem that they place play on a higher plane than twitch or even adventure games because they do reward the mastery of various sorts of knowledge. But because the knowledge must have been acquired prior to playing the game, we think they must demur when offered the educational appellation.

All this is not to say that we think quiz games are bad. Quite the contrary, we enjoy them tremendously, and had a grand time preparing the reviews which follow. We are particularly glad that they exist when we consider the number of game clods we know who lack either ability or enthusiasm for traditional computer games.

No, indeed, we don't dislike quiz games, we just want our readers to view them realistically. With that in mind, let's get on with our reviews of some great entertainment software.

Master Match

The first of the concentration games we examined was *Master Match* by Computer-Advanced Ideas. The game begins the usual preliminary interrogation involving sound effects, instructions, number of players (one or two), and player names.

That done, you are asked to choose a subject area. The master disk comes with 12 subjects including animal sounds, directionality, opposites—Spanish, travel words—German, heads

Apple Mechanic's hi-res type routines and fonts are usable in your programs WITHOUT LICENSING FEE. Just give Beagle Bros credit on your disk and documentation.

APPLE MECHANIC

HI-RES SHAPE EDITOR / TYPE FONT DISK
by BERT KERSEY

$29.50: Includes Peeks/Pokes Chart & Tip Book #5.

SHAPE EDITOR: Keyboard-draw hi-res shapes for animation in your Applesoft programs. Access & create **proportionally-spaced hi-res Typefaces** with each character re-definable as you want. Six fonts are included on the disk. Excellent LISTable Applesoft demos show you how to animate graphics and create professional-looking Charts and Graphs.

BYTE-ZAP: Rewrite any byte on a disk for repair or alteration. Load entire sectors on the screen for inspection. **Hex/Dec/Ascii displays** and input. Educational experiments included for making trick file names, restoring deleted files, changing DOS, etc.

MORE: Useful music, text and hi-res tricks for your programs. Clear educational documentation.

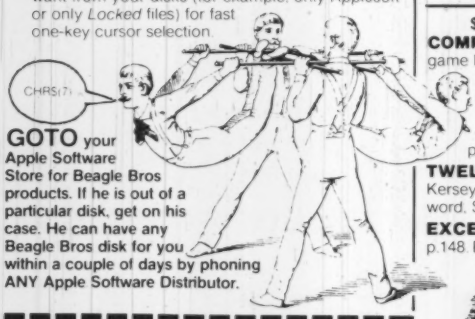
APPLE MECHANIC TYPEFACES

by BERT KERSEY

$20.00: Includes Peeks & Pokes Chart.

26 NEW FONTS for use with Apple Mechanic programs. Many different sizes and typestyles, both ordinary and *Artistic*. Every character—from A to Z to "★" to "□"—of every typeface—from "Ace" to "Zooloo"—is re-definable to suit your needs. All typefaces are **proportionally spaced** for a more professional appearance. People *do* notice the difference!

BEAGLE MENU: Display only the file names you want from your disks (for example, only *Applesoft* or only *Locked* files) for fast one-key cursor selection.



GOTO your Apple Software Store for Beagle Bros products. If he is out of a particular disk, get on his case. He can have any Beagle Bros disk for you within a couple of days by phoning ANY Apple Software Distributor.

RUSH the following disks by First Class Mail—

☐ Alpha Plot	$39.50	☐ Frame-Up	$29.50
☐ Apple Mechanic	29.50	☐ GPLE	49.95
☐ A.M.Typefaces	20.00	☐ ProntoDOS	29.50
☐ Beagle Bag	29.50	☐ Silicon Salad	24.95
☐ Beagle BASIC	34.95	☐ Tip Disk #1	20.00
☐ DiskQuik	29.50	☐ Utility City	29.50
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☐ Double-Take	34.95	☐ ADD ME to mailing list	
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OR mail U.S. Check, Money-Order or Visa/MC# to **BEAGLE BROS**, 8th Floor, 4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add $1.50 First Class Shipping, Any Size Order. Overseas add $4.00. COD add $3.00. California add 6%.
ALL ORDERS SHIPPED IMMEDIATELY.

AD#8A

DOS BOSS

DISK COMMAND EDITOR
by BERT KERSEY and JACK CASSIDY

$24.00: Includes Peeks/Pokes Chart & Tip Book #2.

RENAME DOS COMMANDS & Error Messages—"Catalog" can be "Cat", "Syntax Error" can be "Oops" or almost *anything* you want it to be.

PROTECT YOUR PROGRAMS. An unauthorized Save-attempt can produce a "Not Copyable" message, or *any* message you want. Also easy List-Prevention and other useful Apple tips and tricks. Plus one-key program-execution from catalog.

CUSTOMIZE DOS. Change the catalog Disk Volume heading to your message or title. Omit or alter catalog file codes. Fascinating documentation, tips and educational Apple experiments.

ANYONE USING YOUR DISKS (booted or not) will be using DOS the way YOU designed it.

```
10 LIST: LIST: LIST: FOR ZZ PEEK(175)+PEEK
(176)*256+36 TO 3072: POKE ZZ,216: NEXT
20 FOR XXX 1 TO 2: POKE-16299,0: POKE
-16300,0: XXX 1: NEXT: REM Experiment
with different length variable names.
```

BEAGLE BAG

12 APPLE GAMES ON ONE DISK
by BERT KERSEY

$29.50: Includes Peeks & Pokes Chart.

COMPARE BEAGLE BAG with any single-game Locked-Up disk on the market today. All 12 games are a blast, the price is a bargain, the instructions are crystal clear, *and* the disk is COPYABLE. You can even *change* the programs or list them to learn programming tricks by seeing how they work.

TWELVE GAMES from the Applesoft Ace, Bert Kersey— TextTrain, Wowzo, Magic Pack, Buzzword, Slippery Digits, and many many more...

EXCELLENT REVIEWS—See Jan-83 *Softalk*, p.148. Beagle Menu too. See Typefaces description.

Beagle Bros
Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.* (Don't Settle for Less!)

*DISKQUIK requires Apple IIe.

"APPLE" is a Registered Trade Mark of You-Know-Who.

NEW! SILICON SALAD

INCLUDING TIP DISK #2
by BERT KERSEY and MARK SIMONSEN

$24.95: Includes Peeks/Pokes AND Commands Charts.

MANY MINI-UTILITIES: **Disk Scanner** finds bad disk sectors. **Key-Clicker** adds subtle sound as you type. **DOS-Killer** adds two tracks of space to your disks. **2-Track Cat** allows up to 210 file names per disk. **Program Splitter** makes room for hi-res pix with large Applesoft programs. **Text Imprinter** transfers text to the hi-res screen. **Onerr Tell Me** prints the appropriate error message but continues program execution. **Text Screen Formatter** converts text layouts into Print statements... plus much more Apple wizardry from the boys at Beagle Bros.

MORE TIPS ON DISK: Including fantastic programming tricks from Beagle Bros Tip Books 5, 6 and 7, plus programs from Tips/Tricks Chart #1.

TWO-LINERS TOO: From our customers around the world—and elsewhere. Little mind-blowers that will teach your old Apple some new tricks!

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100 TIP BOOK TIPS ON DISK
by BERT KERSEY

$20.00: Includes Peeks & Pokes Chart.

100 LISTABLE PROGRAMS from Beagle Bros Tip Books 1-4. Make your Apple do things it's never done! All 100 programs are LISTable and changeable for Apple experimentation.

COMMAND CHART INCLUDED: Free with each Tip Disk: an 11 x 17 poster of all Applesoft, Integer Basic & DOS Commands with Descriptions!

FLEX TYPE

(FORMERLY "FLEX TEXT")
VARIABLE-WIDTH HI-RES TEXT UTILITY
by MARK SIMONSEN

$29.50: Includes Peeks & Pokes Chart.

PRINT VARIABLE-WIDTH TEXT on both hi-res screens with normal Applesoft commands (including HTAB 1-70). Normal, expanded & compressed text with no extra hardware. (70-column text requires a monochrome monitor, not a tv).

ADD GRAPHICS TO TEXT or add Text to hi-res graphics. Run your existing Applesoft programs under Flex Type control. Fast, easy to use, and Compatible with GPLE and Double-Take.

DOS TOOL KIT* font compatibility, or use the supplied Flex Type typefaces. Select up to 9 fonts with control-key commands. A text character editor lets you redesign any Apple text character.

FRAME-UP

FAST APPLE DISPLAY UTILITY
by TOM WEISHAAR

$29.50: Includes Peeks & Pokes Chart.

PROFESSIONAL PRESENTATIONS: Turn your existing Hi-Res, Lo-Res and Text frames into attractive Apple "slide shows". *FAST* hi-res loads in 2½ seconds! Paddle or Keyboard-advance frames.

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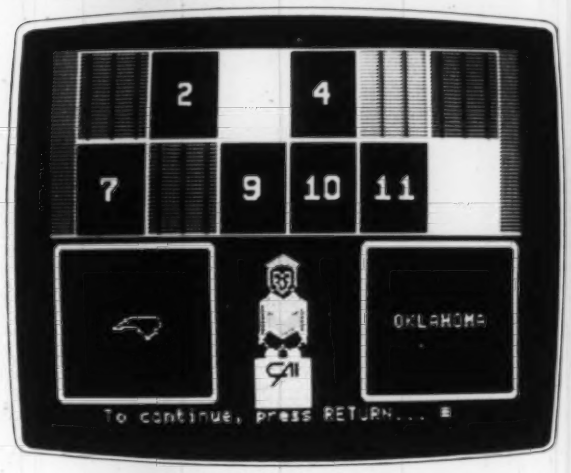
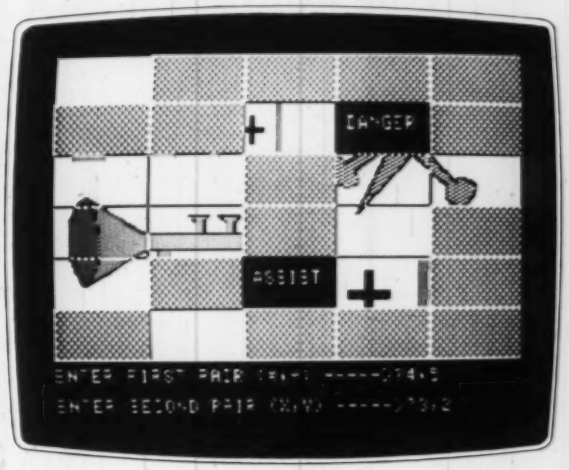
CIRCLE 109 ON READER SERVICE CARD



Master Match



Match Wits

and tails, and U.S. geography. There is a vast difference in the level of difficulty from one subject to another, but there is no way to know in advance which are the more advanced topics. Heads and tails, for example, requires only that you match the tops and bottoms of three animal outlines. In contrast, travel words—German expects you to match nine relatively complex German sentences such as "Ich möchte einen Platz auf dem flug nach München buchen" with their English equivalents. We think the user, whether he be student, parent, or teacher, should be able to tell the level of difficulty in advance.

After the subject area is chosen, the game board appears: 6, 12, or 18 numbered squares at the top of the screen with the CAI owl in the center below. The owl asks you to choose a square by typing its number. The clue from that square then appears alongside the owl and you have a chance to choose the square that reveals the other half of the pair.

If you choose correctly, you see a mini light show as both boxes light up and eventually are filled in. You earn two points for each correct match, and the owl totals your score each time you make one. If you guess incorrectly, the owl soberly informs you of the fact and continues with the game.

At the end of the game, you see your score for that game, and the owl asks if you want to play again. If you want to play again using the same subject area, the program recycles quickly, and you find yourself facing the owl and the quiz squares again very soon. If, however, you choose to play again using a different subject area, you must repeat the entire introductory sequence, specifying your preference for sound or not, your name, etc. The same thing happens if you misspell the title of the subject area you choose. We grew weary of this almost immediately.

creative computing
SOFTWARE PROFILE

Name: Master Match
Type: Educational concentration-type game
Author: Greg Robbins
System: Apple II
Format: Disk
Language: Machine
Summary: An adequate concentration quiz game with a few rough edges; easy to add material.
Price: $39.95
Manufacturer:
Computer-Advanced Ideas
1442-A Walnut St., Suite 341
Berkeley, CA 94709
(415) 526-9100

Adding News Items

Adding new quiz items to the game is quite simple. You can create new subject areas of your own, change the ones that come with the program, and save your additions and changes to disk.

You can use straight alphanumeric pairs, or you can create graphic representations that match either other graphic figures or alphanumeric clues. In the U.S. geography category, for example, the names of states are paired with graphic outlines of the corresponding states.

Documentation

The documentation consists of a 19-page, small format booklet, the contents of which have been typed and reduced in size. The instructions for both game play and adding additional quiz items are straightforward and adequate. There are no educational objectives or suggestions for additional activities.

Our copy came with an errata sheet which included a corrected paragraph for the section on adding quiz items.

Summary

If you enjoy concentration-type games, *Master Match* is a reasonable choice. It is not the most polished or professional game of its ilk that we have seen, but it does the job, provides a simple way to add quiz items, and offers a reasonable choice of subject areas and levels of difficulty.

CIRCLE 405 ON READER SERVICE CARD

Match Wits

Match Wits from CBS Software may be entertaining, but it is definitely not for kids. Few pre-adolescents of our

creative computing
SOFTWARE PROFILE

Name: Match Wits
Type: Concentration-type game
Suggested Age: 12 to adult
Author: Dave Cooper
System: Apple II, IBM PC
Format: Disk
Summary: Challenging game for older members of the family.
Price: $29.95
Manufacturer:
CBS Software
One Fawcett Pl.
Greenwich, CT 06836
(203) 622-2525

Square Pairs

Fax

acquaintance possess the knowledge necessary to do much more than guess at combinations such Sikorsky/helicopter and Super Fudge/Judy Blume.

The matching process is further complicated by the site of the grid on which the pairs are hidden (5x6) and the method of identifying the squares (x,y coordinates).

As the game begins, you specify the usual sound off/on and names of the two players or teams. You then choose from the menu a category such as sports, words, cities, famous people, multiplication, or animals. When you have made your choice, a second menu allows you to choose one of three subcategories (synonyms, antonyms, compounds for words) or all three.

Match Wits is very challenging implementation of the concentration theme. It has the added motivation of the puzzle to solve.

After a short delay, the game board appears, and the first player begins by specifying the coordinates of the square he wishes to turn over. He then tries to match it. If he fails to match it, the message "Sorry, no match" appears, and the second player gets a turn.

If he makes a match, he earns 150 points. Two puzzle pieces are revealed, and he gets a chance to solve the puzzle.

We found the puzzles the easiest part of the game. We saw only rebuses of common phrases and expressions, but the instruction booklet says that they may also be pictures of famous people, places and things.

If the player chooses not to guess at a puzzle solution, he can pass by pressing RETURN, and he gets another turn at match making. If he guesses incorrectly, the turn passes to his opponent. Some of our playtesters had problems at this point early in the game when very little of the puzzle was revealed. Since it was pointless to guess, they were eager to get on with their turns, and frequently forgot to press RETURN before entering a new set of coordinates. In that situation, the program thinks the player is entering 2,4, for example, as his puzzle solution, tells him he is wrong, and gives his turn to the other player—very frustrating. It would not have been difficult to trap for that kind of incorrect response.

When one of the players finally solves the puzzle, the program tallies the scores for both players and offers a chance to continue playing.

Adding New Items

The *Match Wits* Secretary is the portion of the program that allows you to create new game files.

Detailed instructions are on the disk, and although they will probably overwhelm you the first time you try to add your own pairs, a bit of experimentation will soon convince you that procedure is not at all difficult. You cannot, of course, create your own puzzles.

By adding easier combinations, parents can easily render *Match Wits* playable by younger members of the family.

The only problem we had with the Secretary portion of the program was leaving it. After we had created our new game file, we pressed the key that promised "exit" only to have the program hang, leaving us with an error message. We re-booted the game and were able to use the pairs we had created, but we were never able to get back to the game from the Secretary.

Documentation

The documentation for the game is a four-page leaflet that provides a basic outline of game play and the Secretary feature.

Since the package is positioned as a game rather than an educational program, there are no educational objectives or suggested classroom activities in the manual. There is, however, a list of suggested categories which can be used in creating additional game files.

Summary

Match Wits is a very challenging implementation of the concentration theme. It has the added motivation of the puzzle to solve, and should offer many hours of entertainment to older members of the family.

As always, we appreciate the ease with which game files can be added, but we hope that your copy of the game has been better debugged than ours was. We also think the game could have been improved by the addition of labels on the grid and ability to change the size of the grid.

CIRCLE 406 ON READER SERVICE CARD

Square Pairs

Square Pairs from Scholastic is probably the most flexible of the concentration-type games we reviewed. It allows you to control not only the contents of the squares to be matched, but the size of the game board as well.

As the game begins, the first thing you

see is the main menu, which offers the following choices: play the game whose title is shown at the top of the screen, select another game, change options, make a new game, revise the current game, and use disk aids. You use the arrow keys to move the pointer and make your choice.

The program then asks for the names of the players, and the game board, which consists of from eight to twenty squares arranged in a grid, appears. At the bottom of the screen are messages telling whose turn it is and the current score.

Players take turns uncovering one square at a time as they attempt to find matching pairs. When a match is made, the affected squares blink a few times and then turn a different color from the rest of the background.

The games that are on the disk as you buy it are cities-countries; computer terms; dirty words (grime, slime, mud, etc.); do, re, mi; faces; French-English; Guinness records; old sayings; opposites; oppostands; and sequences. There is only one set of pairs per game, but the variety in both subject matter and size of grid is sufficient to provide a fair amount of play.

Adding New Items

The real beauty of *Square Pairs*, is the ease with which new games can be created. When you select Make a New Game, you first choose the size of your gameboard. You then type your matches one at a time into pairs of squares that appear on the screen along with the instructions.

After you have created your game, you have an opportunity to save it on disk or to check and revise it if necessary.

Using the Change Options option on the main menu, you can specify the number of players (one to three), whether or not you want the computer to play, and whether or not you want sound.

Documentation

The 16-page instruction book provides detailed instructions for playing the game, changing the options, and creating your own games. For the most part, the instructions on the disk are quite adequate, but the booklet offers a bit of extra security for the inexperienced user.

The real beauty of Square Pairs, however, is the ease with which new games can be created.

The last page of the booklet offers some ideas and examples of games you can create yourself.

Our only complaint about the package concerns the package itself; the box in which the program is sold is a three-dimensional parallelogram (as is the instruction booklet). No matter where or how you store your software, this package will be a nuisance. Even if you remove the disk from the box and store it in a disk box, you will still have the booklet to contend with; it just does not fit in any standard container.

Summary

Packaging problems notwithstanding, we liked *Square Pairs* and found it challenging even to people older than the recommended 7 to 12 years—particularly when we used our own game questions.

We liked the variety offered by the game topics and the variable grid size. We also applaud the ease with which new games can be created and the clear documentation. *Square Pairs* is a good choice for concentration buffs of all ages.

CIRCLE 407 ON READER SERVICE CARD

creative computing
SOFTWARE PROFILE

Name: Square Pairs
Type: Educational concentration-type game
Suggest Age: 7 to 12
Authors: Glenn M. Kleiman and Steve Minsuk
System: Apple disk, 32K Atari cassette and disk, Commodore 64, TI 99 4/A, Vic 20
Format: Disk
Summary: Well thought out and executed concentration quiz game; easy to add new material.
Price: $19.95
Manufacturer:
Scholastic Inc.
730 Broadway
New York, NY 10003
(212) 505-3000

Fax

What was the length of the longest worm ever found? If you know that the answer is 180 feet (gag!), you will probably enjoy *Fax*, the licensed version of the video game of the same name. Even if you didn't have that answer on the tip of your tongue, if you like trivia, you will like *Fax*.

The object of the game is simple: to answer as many trivia questions as possible as quickly as possible. A question appears at the top of the screen, and you have about two seconds to study it before the multiple choice answers appear and the clock starts to tick. If you answer correctly, you earn all the points remaining on the score clock. If you answer incorrectly, the clock stops, and you earn no points.

In two-player mode, players play against each other as they try to beat the clock. Each player has his own set of keys; player one uses keys 1 to 4, and player two uses 6 to 9.

At the beginning of the game you have a given amount of time; when that time is gone, the game ends. If, however, you reach the pre-determined bonus level with time remaining on the game clock, you win additional time.

The pace is fast and frantic, and some of the questions and answers are quite amusing. (A woman in Los Angeles married a rock—true or false). Others just seem stupid, and we began to wonder why they were included (What is a kidney? 1. The leg joint of a young goat—no other answers listed).

The *Fax* package includes two disks. One holds the program and the other the data. There are four categories from which to choose your questions: entertainment and grab bag are on one side of the data disk, and sports and history are on the other. There is no way to add questions. The game also offers three difficulty levels—novice, expert, and genius—the questions are the same, but more points are needed to earn additional time at the higher levels.

We found *Fax* entertaining and stimulating in both one- and two-player modes, and we plan to have it running at our next party.

CIRCLE 408 ON READER SERVICE CARD

creative computing
SOFTWARE PROFILE

Name: Fax
Type: Trivia Q & A
Authors: Mike Craven and Vic Tolomel
System: Apple II, Commodore 64
Format: Disk
Summary: Fast paced antics for agile minds
Price: $30
Manufacturer:
Epyx
1043 Kiel Ct.
Sunnyvale, CA 94089
(408) 745-0700

creative computing software evaluation

Growing Up Literate

Part 5

Betsy Staples

Evaluating software for preschool and early elementary age children is not an easy task. We can observe the reactions of our team of young playtesters, and we can report our own adult responses, but we have a hard time pretending to know what your children will like and how long they will like it.

In many cases, the age ranges given for early learning packages are deceptive. How, for example, can a program be suitable for children aged 3 to 8? Perhaps a very precocious three-year-old and a slow eight-year-old could, indeed, enjoy the game, but we think that the vast majority of the children who will be playing it will be from a much narrower age range.

Then there is the question of staying power. Does the game have the ability to keep kids coming back—to entertain and educate them even after they have mastered it? When parents invest $25 to $50 in a software package, they certainly want, and have a right to expect, it to be a lasting source of education and enjoyment for their children, not something to be consumed in an afternoon and retired.

Based on our observations, we conclude that simple games, like simple toys, seem to have the most enduring attraction. This is undoubtedly because they offer greater opportunity for exploration and creativity. Each time the child returns to the game, he can create new creatures, try a new strategy, draw a new picture, so the game itself never seems old.

We leave the final assessment of the potential staying power of each program to you. You know your child and have undoubtedly already drawn conclusions about the types of games and toys that hold his interest. We urge you to apply these observations to educational software as well.

In the classroom, of course, this problem is less serious, since the program can be used by all or most of the children in the class not only this year, but next year, and maybe even the year after. All of the games described below are suitable for classroom use, although we suspect that teachers will prefer those which require minimal supervision.

The Stickybear series from Weekly Reader Family Software is quite simply delightful.

Now, with the generalizations out of the way, let's have a look at some specific programs for preschool and early elementary school children.

Stickybear Shapes

The Stickybear series from Weekly Reader Family Software is quite simply delightful. The programs are visually appealing as well as educationally sound.

Stickybear Shapes includes a hardcover, full color book that introduces the shapes—circle, square, triangle, rectangle, and diamond in a clever, colorful format. The shapes also appear on the colorful poster and on a set of eight stickers which features Stickybear, the jolly, cuddly star of the software show. Also included in the package is a four-page Parent's Guide.

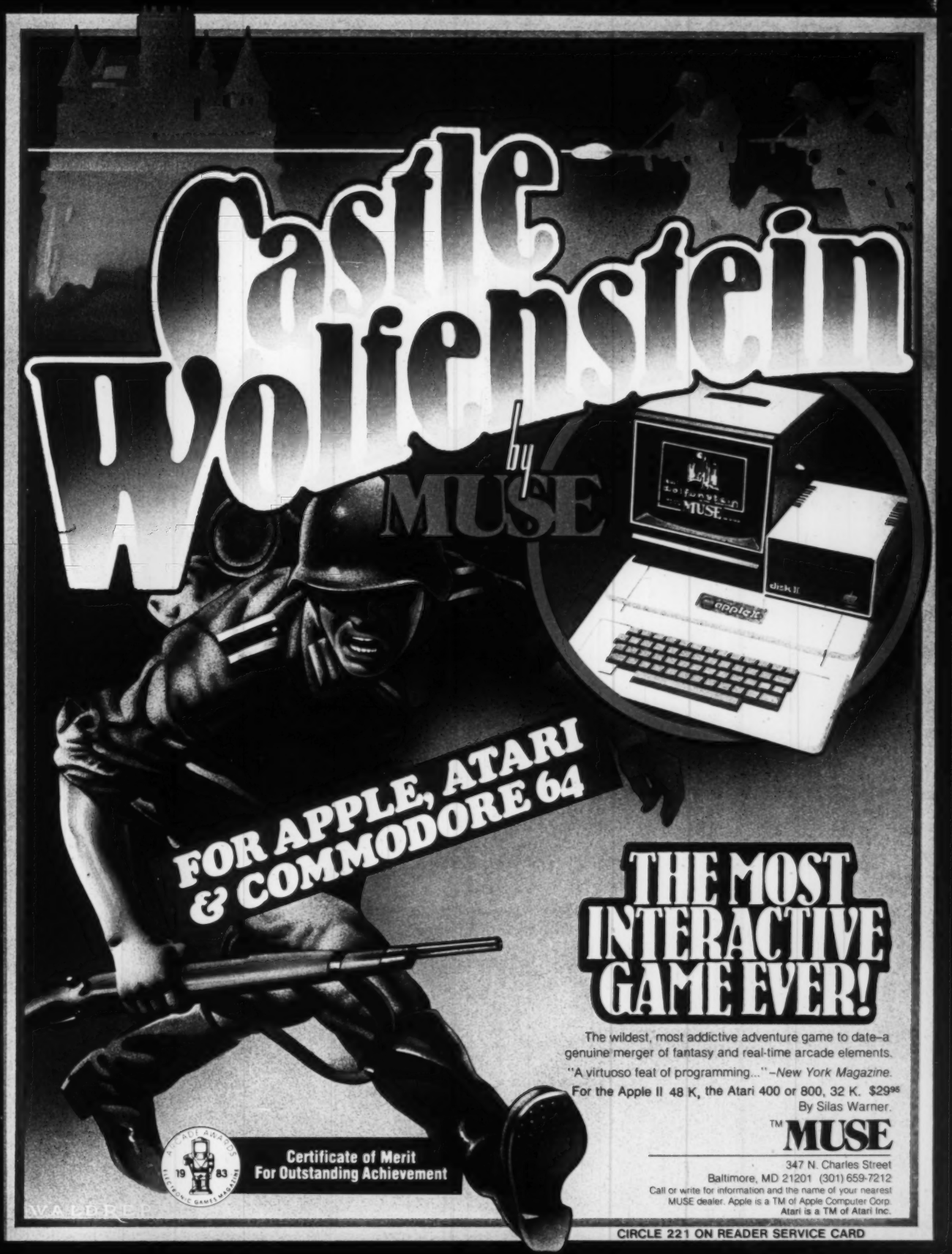
The game can be played using either the keyboard or a paddle. We found the keyboard much easier to use, although our three-year-old occasionally had difficulty finding the correct keys after she had removed her fingers from them. The Parent's Guide urges you to allow your child to discover the functions of the keys or paddle on his own. Our children had no trouble with this and were soon playing the game as capably as if we had spent half an hour explaining it to them.

The disk includes three games: Pick It, Name It, and Find It. the games are listed in that order on the menu, but the Guide suggests starting with Find It.

Find It consists of eight hi-res pictures, each of which includes all five of the shapes. A sample shape appears at the bottom of the screen, and the child must press the arrow keys or turn the paddle until the matching shape is flashing in the picture. He then presses the spacebar or fire button. If the answer is correct, the picture becomes animated and stays that way until the child decides to move on by pressing the spacebar again. If the answer is incorrect, the child hears "a low bloop" and must try again.

creative computing
SOFTWARE PROFILE

Name: Stickybear Shapes
Type: Early learning game
Suggested Age: 3 to 6
Authors: Richard Hefter, Janie and Steve Worthington
System: Apple
Format: Disk
Summary: Friendly bear teaches about shapes
Price: $39.95
Manufacturer:
Weekly Reader Family Software
245 Long Hill Rd.
Middletown, CT 06457
(800) 852-5000
(203) 347-7251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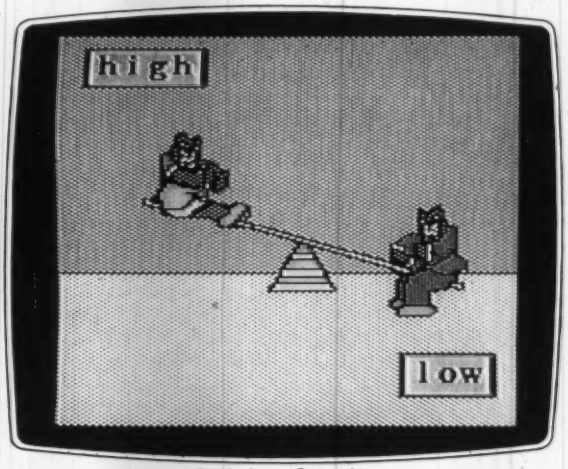
Stickybear Shapes



Stickybear Opposites

In Pick It, the child sees a picture from which one of the shapes is missing. He must choose that shape from the five samples appearing at the bottom of the screen. When he makes the correct choice, the missing shape is filled in, and the picture is animated.

Name It requires the child to read the name of the shape as it appears on the screen. The five sample shapes appear at the bottom of the screen, and the child must press the keys or turn the knob until the one whose name is displayed flashes.

The Parent's Guide offers suggestions for talking about the program with your child and lists additional activities you can do to reinforce the concepts introduced in the program.

We liked the whole package, and so did the kids. We also found that it was, indeed, suitable for the 3 to 6 age range suggested.

CIRCLE 409 ON READER SERVICE CARD

Stickybear Opposites

Stickybear Opposites is our favorite in this excellent series. Like *Shapes,* it comes with a hardcover book, poster, stickers, and Parent's Guide, but the graphics are what makes this program absolutely irresistible.

Again, the Guide encourages you to let your child learn to use the program by experimenting with the keyboard or paddle, and, again, our children had no trouble with this—they were old pros by now.

In *Opposites,* the child uses the arrow keys or paddle to switch between detailed hi-res pictures illustrating words opposite in meaning. For example, in the illustration of *up,* we see Stickybear climbing a flight of stairs. When we switch to the opposite picture, we see him descending the same stairs. In another picture we see Sticky's *back* followed by an about face which shows his smiling *front.* In each case the word being illustrated appears on the screen along with the graphics.

Flipping between the two pictures in each pair occurs instantaneously, and there is only a short delay when moving from one pair to the next. The child can flip back and forth as many times as he wants in a given pair, and there are enough pairs of words to keep him playing for quite a while.

The Parent's Guide says that *Opposites* encourages computer awareness and exploration and discovery while teaching the concept of opposites. It certainly seems to do all those things well and in an entertaining way.

The Guide also includes suggestions for using the program with your child and lists additional activities to reinforce the concepts introduced.

creative computing

SOFTWARE PROFILE

Name: Stickybear Opposites
Type: Early learning game
Suggested Age: 3 to 6
Authors: Richard Hefter, Janie and Steve Worthington
System: Apple
Format: Disk
Summary: One of the best
Price: $39.95
Manufacturer:
Weekly Reader Family Software
245 Long Hill Rd.
Middletown, CT 06457
(800) 852-5000
(203) 347-7251

As we said at the beginning, this is our favorite Stickybear program. Children who could read enjoyed seeing the illustrations of words they knew; children who were learning to read enjoyed guessing the words after seeing the illustration; and children who could not read had fun just learning the concepts and recognizing the pictures. We recommend *Stickybear Opposites* without reservation.

CIRCLE 409 ON READER SERVICE CARD

Stickybear Basket Bounce

Stickybear Basket Bounce is not an educational program. We have included it here simply because it is a program that can be played by preschoolers and enjoyed by the whole family; there are not many games about which that can be said.

Basket Bounce is a low pressure version of *Kaboom.* Stickybear, carrying a large basket, runs back and forth at the bottom of the screen trying to catch the objects that fall from above. You control him using the keyboard, joystick, or paddle to move him back and forth and the spacebar or fire button to make him jump.

There are 16 rounds, each harder than the one before. As you progress in the game, you get to catch different kinds of objects, and the point value of those objects increases. You begin with four baskets and earn an additional one each time you complete a round.

If you allow Stickybear to be hit or tripped by a falling or rolling object, you lose a basket. When you have no baskets left, a bulldozer appears from the right and pushes Stickybear off the screen.

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Early Learning (Ages 3 to 6)

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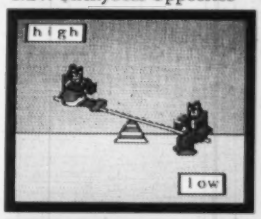
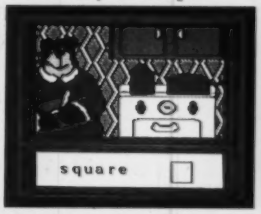
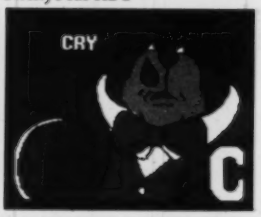
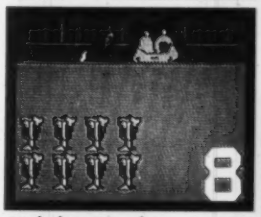


NEW Stickybear Shapes



Stickybear ABC



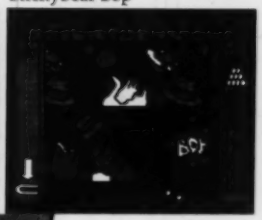


Stickybear Numbers

Games for the family

NEW Stickybear Basketbounce

Stickybear Bop



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A/M33-B22

CIRCLE 210 ON READER SERVICE CARD

100
PAGES

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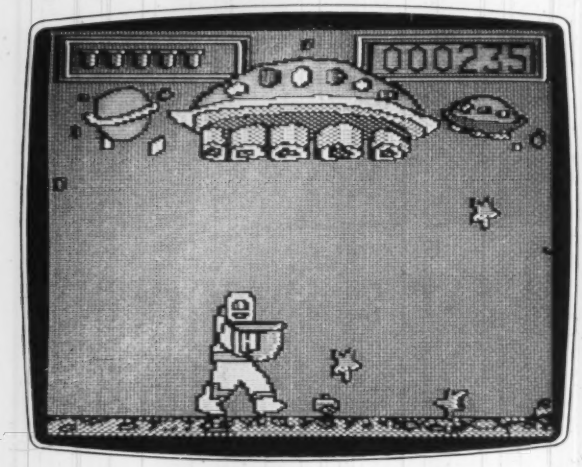
Scholastic™ Wizware

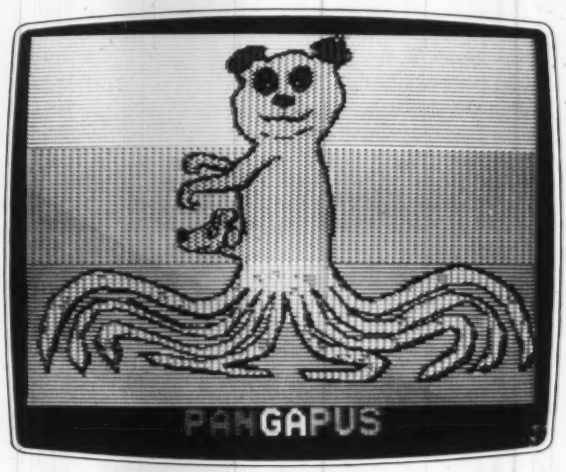
Spelldiver, Agent U.S.A. and Bannercatch designed and developed by Tom Snyder Productions, Inc. Story Tree designed and developed by George Brackett.

Spelldiver, Agent U.S.A. and Bannercatch available for Atari 800/1200/XL, Commodore, Apple and IBM versions available soon. Story Tree available for Apple.

CIRCLE 195 ON READER SERVICE CARD



Stickybear Basket Bounce



Jeepers Creatures

creative computing
SOFTWARE PROFILE

Name: Stickybear Basket Bounce
Type: Arcade-type game
Suggested Age: 4 to adult
Authors: Richard Hefter, Janie and Steve Worthington
System: Apple
Format: Disk
Summary: A cute game suitable for preschoolers
Price: $39.95
Manufacturer:
Weekly Reader Family Software
245 Long Hill Rd.
Middletown, CT 06457
(800) 852-5000
(203) 347-7251

disk, a feature that puts this simple game on a par with many of the more difficult arcade games.

Our young playtesters were charmed by *Stickybear Basket Bounce*. They giggled at the silly bear runnin' back and forth and marveled at their own ability to control his antics. Our adult players had fun too, although we won't pretend that our teenage arcaders were satisfied with it for long.

Stickybear Basket Bounce is an enjoyable game which allows youngsters and their parents to compete on an almost equal footing—and with some practice the adults may eventually achieve higher scores than the kids!

CIRCLE 409 ON READER SERVICE CARD

Jeepers Creatures

While we are on the subject of programs that are simply fun, let's talk about *Jeepers Creatures* from Kangaroo. Like *Basket Bounce, Jeepers Creatures* makes no claim to be educational. It is simply an entertaining program for children aged 3 to 8.

Like the old picture books the pages of which are cut in thirds so you can place a fireman's head on a clown's body and a gorilla's feet, this program allows the child to create new creatures from the body parts of familiar ones.

As the program begins, the current "zoo" is displayed. Ten animals appear with their names printed below their hires pictures. The child is then invited to mix and match the body parts by pressing one key from each of the three middle rows of the keyboard. When a new animal is formed, its name, consisting of syllables from the names of its components, appears under it. A panda's head with a dog's body and an owl's tail and feet, for example, becomes a pandogowl.

When the child tires of the first zoo, he can press RETURN and get ten more animals to rearrange. Most of the animals are familiar enough that children do not have to be able to read to identify them. The new names are lost on nonreaders, but beginning readers have fun sounding them out.

creative computing
SOFTWARE PROFILE

Name: Jeepers Creatures
Type: Game for preschoolers
Suggested Age: 3 to 7
System: Apple; Atari
Format: Disk
Summary: Nicely executed mix and match game
Price: $34.95
Manufacturer:
Kangaroo, Inc.
332 S. Michigan Ave.
Suite 700
Chicago, IL 60604
(312) 987-9050

A panda's head with a dog's body and an owl's tail and feet, for example, becomes a pandogowl.

When the child creates one of the original animals, he sees a congratulatory message.

The children all enjoyed *Jeepers Creatures*, and it seems like the sort of program that would wear well—children should have fun playing it more than once. The creatures in the zoo are cute, recognizable, and drawn simply enough that their parts match up nicely when they are combined. Our only criticism is that it seems just a bit overpriced at $34.95.

CIRCLE 410 ON READER SERVICE CARD

Mix and Match

Mix and Match is (oddly enough) a mix and match game licensed from Children's Television Workshop and sold by Apple. In this one, the child chooses the parts of Muppets. On the screen are the heads, bodies, or feet of Big Bird, Grover, Ernie, Oscar, Bert, and Cookie Monster. Each has a number next to it, and the child types in the number of the part he wants to choose.

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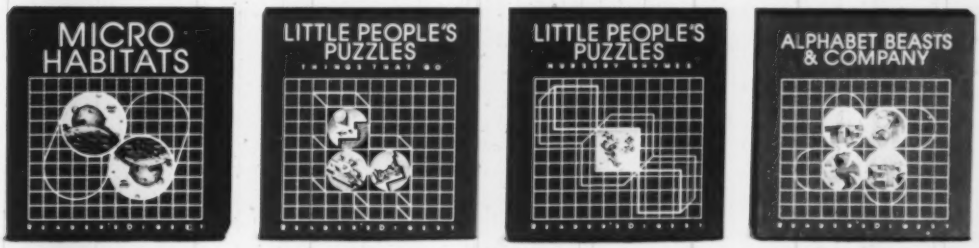

Little People's Puzzles, Alphabet Beasts and Company, and Micro Habitats are available for Apple® II, II Plus, IIe: 48K and disk drive, and Commodore™ 64 Machine and disk drive. Color monitor is required for Little People's Puzzles, preferred for Alphabet Beasts and Company. Color monitor and joystick preferred for Micro Habitats. Alphabet Beasts and Company, and Micro Habitats available for IBM® PC and PCjr in spring, 1984. Warranty information available upon request by writing to: Reader's Digest Services, Inc., Microcomputer Software Division, Pleasantville, New York 10570.

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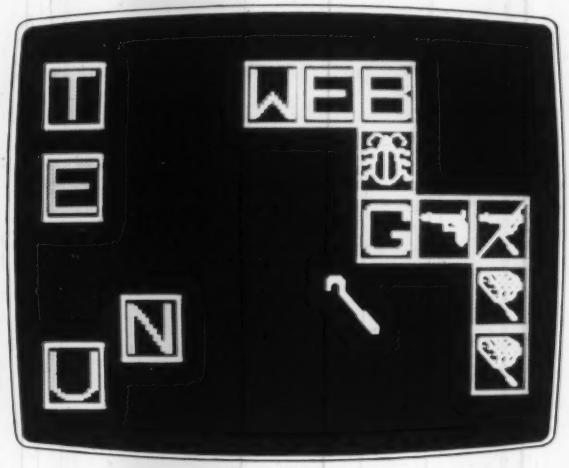
CIRCLE 182 ON READER SERVICE CARD

Mix and Match



Look 'N Hook

When he has made his choices, the Muppet parts disappear and Cookie Monster appears stirring a bowl and saying "me mix up for you." Shortly thereafter, the new Muppet appears with his new name printed below.

The hi-res representations of the Muppets are very well done. Unfortunately, the text on the screen—including the name of the new Muppet—is almost impossible for a young child to read. Even when we copied the new names on paper, our beginning readers had difficulty pronouncing names like Oscarernver.

Since only six Muppets are represented, this game has considerably less staying power than the one reviewed above. Children, of course, adore their friends from Sesame Street and are fascinated to find them in the Apple but we noticed that they grew bored after about ten turns.

Also included in the *Mix and Match* package are three additional games: Animal, a language and classification game; Layer Cake, a simplified version of the Towers of Hanoi problem; and Raise the Flag, a Hangman variation. These three games were developed by Creative Computing Software in 1980 for the computer center at Sesame Place in Bucks County, PA, and we were surprised to find such relics on a disk being sold in 1984. There is nothing wrong with these games if you don't mind the fact that you can buy them along with about 98 others in *Basic Computer Games* for well under $10.

creative computing

SOFTWARE PROFILE

Name: Mix and Match
Type: Children's games
Authors: Children's Television Workshop
System: Apple
Format: Disk
Summary: A mediocre collection of antique games
Price: $25
Manufacturer:
Apple Computer
20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010

Children, of course, adore their friends from Sesame Street and are fascinated to find them in the Apple.

What you don't get in *Basic Games* is the supplementary documentation that comes with *Mix and Match.* Along with instructions for playing the games, CTW has provided in the instruction booklet several pages of suggestions for play expanding on the concepts introduced in the games.

We can think of no better way to describe *Mix and Match* than "a mixed bag." It has a few strong points, a few weak points, and quite a number of mediocre points.

CIRCLE 411 ON READER SERVICE CARD

Look 'N Hook

Look 'N Hook is a package of word puzzles for beginning readers. A very elementary form of crossword puzzle, it requires the child to spell words based on picture clues and rewards him with a familiar nursery rhyme tune.

The documentation booklet advises you to review the pictures and the words they represent before playing the game. Included in the list are 24 three-letter words in the consonant-vowel-consonant pattern: cat, hen, pig, pot, nut, bug, etc.

As the program begins, you turn the sound on or off by pressing the fire button on the joystick when a picture of music notes is flashing. You then choose the puzzle you want to do in the same manner.

The puzzle then appears with the letters required to complete it displayed on the lefthand side of the screen. The squares at which two words intersect are divided in half diagonally with half of each picture on each side.

To complete the puzzle, the child uses the joystick to move a picture of a hook

creative computing

SOFTWARE PROFILE

Name: Look 'N Hook
Type: Early learning game
Suggested Age: 4 to 8
System: Apple; joystick or paddles
Format: Disk
Language: Pascal
Summary: Challenging word puzzle game
Price: $39.95
Manufacturer:
The Learning Line
P.O. Box 577
Palo Alto, CA 94302
(415) 854-4400

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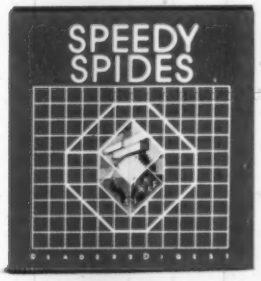

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Speedy Spides runs on Apple®II, II Plus, IIe: 48K and disk drive and Commodore 64™ and disk drive. Use of paddles optional.

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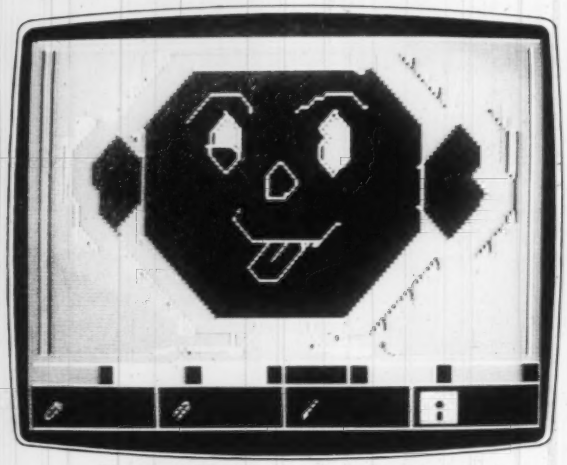

Electronic Playground - Magic Blackboard

Balloon Bandit

The program provides practice in alphabet recognition, reading and spelling 24 three-letter words, eye-hand coordination, and small muscle dexterity.

back and forth between letters and puzzle. When the hook is over the letter he wants to fill in, he presses the fire button to grab it and moves it over the appropriate square in the puzzle, pressing the fire button again to release it.

Each time he places a letter in the correct position in the puzzle, a few more notes are added to the reward tune, so that when the puzzle is finished, the tune is also complete. If the child tries to place a letter incorrectly, the letter floats back over to the side of the screen.

The packaging says that the program provides practice in alphabet recognition, reading and spelling 24 three-letter words, eye-hand coordination, and small muscle dexterity, and it seems to do a good job with those goals. When we first tried to hook a letter with the joystick, we had such difficulty that we feared the children would never be able to control it, but, as usual, they shamed us by handling the task with ease.

The package includes two disks, each of which contains five puzzles, and a small eight-page booklet. The booklet contains the pictures and two pages of "skill booster activities" for beginning readers.

Our beginning readers liked *Look 'N Hook;* completing the puzzle and the tune provided extra motivation for sounding out and spelling simple words. We only wish that there were more puzzles included in the package.

CIRCLE 412 ON READER SERVICE CARD

Electronic Playground

At $24.95, *Electronic Playground* would be a bargain if it contained only one good game, but you may safely multiply that value by two—and maybe even three—for this package includes two high quality games and one "filler" program that will keep your child happy for hours.

Our playtesters' favorite game on the disk was Magic Blackboard.

The game begins as the child selects the game he wants to play from the pictorial menu using the joystick—a very simple task. Although it is the last choice on the menu, Heidi's Program is the simplest and probably a good place to start if your child is not familiar with the computer.

Essentially a filler demonstration, Heidi's Program invites the child to place colored rectangles of random sizes on the screen by pressing the keys on the keyboard. We found that younger children were content to watch the display longer than the older ones; the older kids began to want to exercise control over the size and color of the shapes: "How do I get a big, black one?" and became bored when they discovered that they couldn't. So we moved on to Matchbox.

At the start of Matchbox, the program displays another menu, which allows the child to choose to match shapes, upper- and lowercase letters, or numbers and objects. The Matchbox playing field consists of four boxes—one in the center of each side of the screen. In the numbers-to-objects game, a series of objects appears in the upper lefthand corner of the screen and a number appears in each of the boxes. The child must use the joystick to move Matchman, a cute little creature with feelers, from the center of the screen to the box that contains the numeral that matches the number of objects. If he is successful, a tune plays. The procedure is the same for shapes and letters.

By pressing CTRL-I from the Matchbox menu, you can enter the Adult Management Interface and mod-

creative computing
SOFTWARE PROFILE

Name: Electronic Playground
Type: Early learning games
Suggested Age: 3 to 8
Author: Jeff Tunnell
System: Apple
Format: Disk
Summary: An excellent value; one of our favorites
Price: $24.95
Manufacturer:
Software Entertainment Company
537 Willamette
Eugene, OR 97401
(503) 342-3495

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Warranty information available upon request by writing to: Reader's Digest Services, Inc., Microcomputer Software Division, Pleasantville, N.Y. 10570. Puzzle Mania runs on Apple® II, II Plus, IIe: 48K and disk drive. Commodore™ 64 Machine and disk drive. Color monitor required. IBM® PCjr version available late spring. Puzzle Mania and Reader's Digest Software are trademarks of The Reader's Digest Association, Inc. Apple is a registered trademark of Apple Computer, Inc. Commodore is a trademark of Commodore Electronics Limited. IBM is a registered trademark of International Business Machines, Inc.

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CIRCLE 207 ON READER SERVICE CARD

ify the difficulty level of the matching task.

Our playtesters' favorite game on the disk was Magic Blackboard, a drawing program that allows the child to draw, erase, and fill in with various colors. Just as we started to explain Magic Blackboard to the kids, the phone rang, and we had to leave the computer for about ten minutes. When we returned, the children had figured out how to use the program, and were happily drawing, erasing, and painting.

The most amazing feature of the Magic Blackboard is the hi-res catalog which allows the child to save, load, and delete his own pictures without adult supervision and without using the keyboard. The catalog has room for 12 pictures, each of which is displayed in miniature in black and white on the screen for easy identification. Creating, saving, and recalling their own pictures gave the older children exactly the control they were looking for in Heidi's Program. Talk about staying power—even we had to tear ourselves away from this one.

Of all the games reviewed here, *Electronic Playground* definitely offers the best value in terms of hours of probable play versus cost. The package is only the second released by Software Entertainment Company, and we look forward to seeing what they come up with next.

CIRCLE 413 ON READER SERVICE CARD

Balloon Bandit

The last program in this month's collection appears to be intended for the slightly older child; there is no age range suggested. *Balloon Bandit* combines basic math skills with basic verbal skills in a game format.

The top of the playfield is occupied by nine balloons, behind each of which is either a letter or a "bad star." Below the balloons is a small figure which moves back and forth under the control of the arrow keys.

The object of the game is to solve arithmetic problems. With every correct answer, you get a chance to shoot one of the balloons—not a very challenging task. When the balloon pops, it reveals either a letter or a "bad star." If you get a letter, you get to guess at the scrambled word behind the balloons. If you get "too many" bad stars, you lose. Your score and the high score for the session are displayed at the bottom of the screen.

This package has several problems. The main one is a lack of correspondence between the skill needed to solve the problems and the skill needed to guess the scrambled word. There are four levels of difficulty, and we found that children who could easily answer questions on the novice and intermediate levels didn't stand a chance when it came to unscrambling the mystery word and quickly lost interest in doing so. We are certain that older children who would be able to handle both the problems and the word scrambling would be bored silly by the game.

We realize that randomness is a key factor in many arcade games, but we think it is out of place in an educational program.

Another problem is the random factor introduced by the bad stars. If the purpose of the program is to reinforce arithmetic skills, why should a child who gets the problem correct have to sacrifice his turn to something that counts against him. We realize that randomness is a key factor in many arcade games, but we think it is out of place in an educational program.

The documentation, called a Teacher's Guide, is a 4-page mimeographed "booklet" inaccurately cut, folded, and stapled into a piece of colored paper. We received only instructions for running an Atari tape with our Apple disk.

The first paragraph of the documentation promises that the users of the program will be "taught basic math skills and use elementary reasoning." The package falls so far short of this goal that we are reluctant even to repeat it. *Balloon Bandit* is a package in dire need of a large dose of professionalism; we cannot recommend it.

CIRCLE 414 ON READER SERVICE CARD

creative computing
SOFTWARE PROFILE

Name: Balloon Bandit
Type: Educational game
Author: Peter Wilkens
System: Apple; Atari
Format: Disk; cassette
Summary: Little educational or entertainment value
Price: $25 cassette; $30 disk
Manufacturer:
Orange Cherry Media
7 Delano Dr.
Bedford Hills, NY 10507
(914) 666-8434

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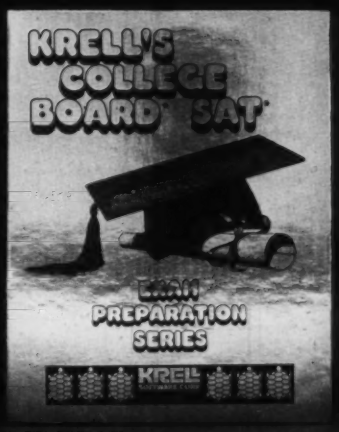

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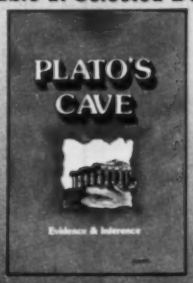

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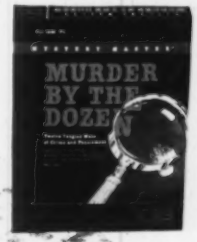

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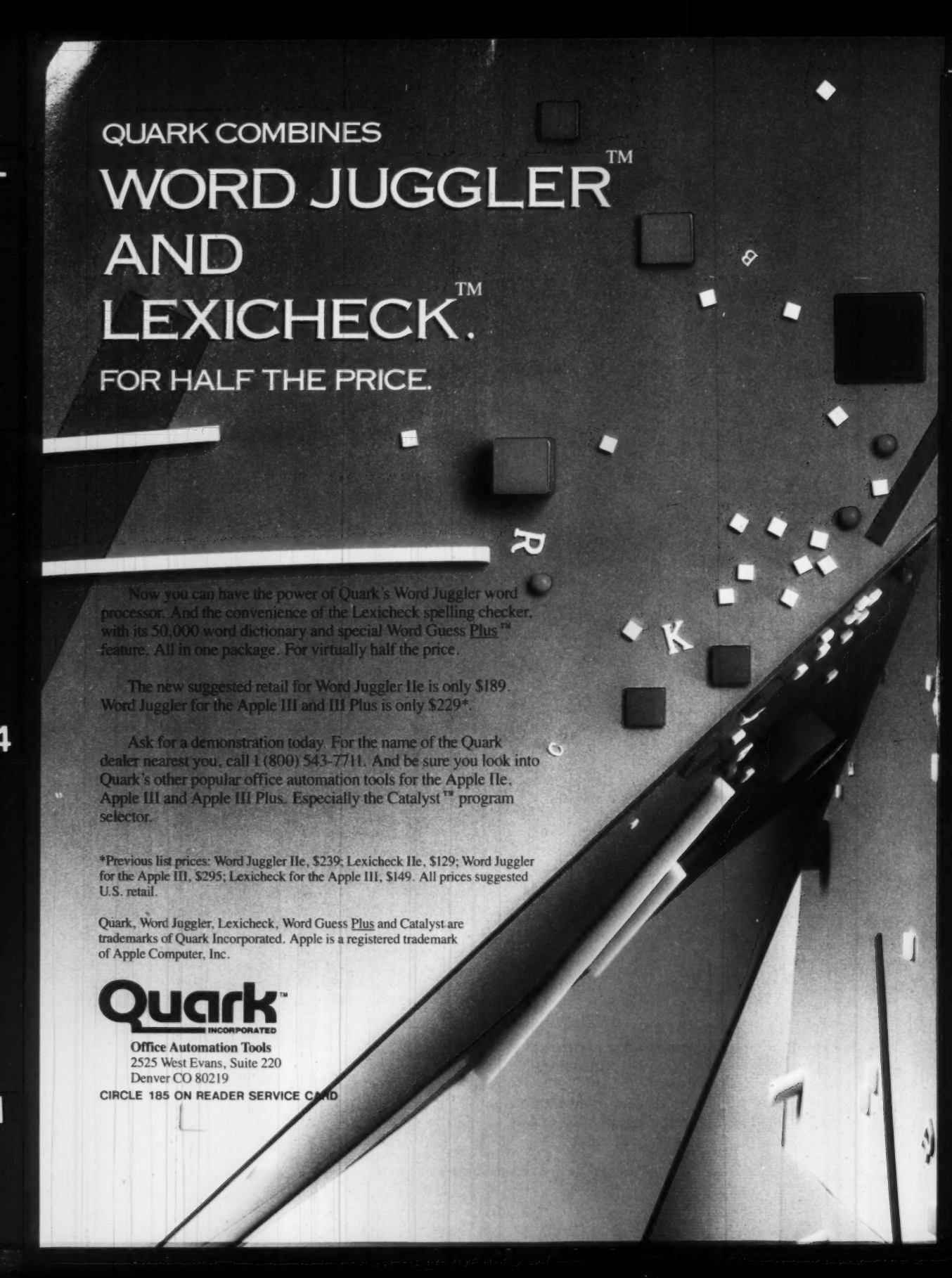
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creative computing software evaluation

Six Microcourses In Elementary Science

David H. Ahl

Spectrum Software has released six elementary science learning packages. Each microcourse is designed to guide student observations of science materials or pictures. The computer basically is used to channel the learning sequence.

The philosophy of the designers is clearly stated on the top of Spectrum's brochure, "There are no games; we have enough faith in children and their teachers, to believe that there are still greater pleasures to be derived from solid learning."

The Microcourse Format

Each program contains three or four lessons consisting of approximately 75 questions in total. The answers to the multiple choice questions can be inferred through observing the accompanying material or illustrated cards. If a question is answered correctly on the first try, the screen displays a congratulatory message (check mark, winking face, "Good Job, Dave," or an animated "Nice Going").

Rocks package comes with disk, Teacher's Guide, box with 18 rock samples, streak plate, hardness squares, and rock labels.

creative computing
SOFTWARE PROFILE

Name: Rocks
Type: Educational tutorial
Author: David Webster
System: Apple, TRS-80 Model III
Format: Disk or tape
Language: Basic
Summary: One of six tutorial microcourses
Price: $53 (see text)
Manufacturer:
Spectrum Software
75 Todd Pond Rd.
Lincoln, MA 01773
(617) 332-4576

Should the student require two or three attempts to answer, the program responds with a statement that reinforces the idea being developed.

The last "lesson" is actually a review test, the results of which are automatically stored on the disk for later review by a teacher.

All of the microcourses have been tested with students, both individually and in a classroom setting.

The six courses available are:

- Tracks. Footprints and tracks of eight animals.
- Rocks. Properties, identity, and uses of 18 rocks and minerals.
- Dinosaurs. Structure, size, and diet of 15 dinosaurs.
- Coins. Designs, composition, grading, and value of coins.
- Teeth. Types of teeth, animal and human teeth, skull X-rays, and dental care.
- Metrics. Significance of metric system, measurements.

Rocks Microcourse

We tried four of the microcourses and found them to be substantially similar. Hence, we are describing the Rocks program as typical.

The basic package comes with a disk (or cassette tape) with the lessons, and an eight-page Teacher's Guide ($18). However, we also obtained the kit of materials ($35) which includes a plastic box with 18 rocks and minerals, porcelain streak plate, three hardness test squares, and set of rock name cards.

Loading instructions for the disk are on the disk jacket—a thoughtful touch. Once

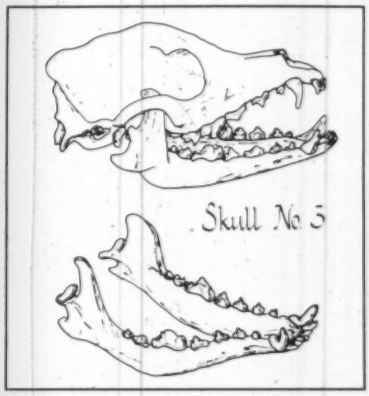
loaded, the program asks with what question you wish to begin; this allows you to break the lesson and come back to it later.

The first lesson consists of 27 questions and covers the properties of rocks and minerals. Questions 1 through 16 could be answered by simply observing and examining the 18 rock samples. The next three questions required the use of the streak plate (some rocks leave a streak or line when drawn across the plate, while others do not). The last eight questions required the use of the hardness squares (plastic, steel, and glass). Most rocks will scratch one or more of the plates; the number of plates that a rock scratches is, for the purposes of this lesson, its hardness rating.

A running score on all the questions answered is shown at the bottom of the screen. After all the questions have been answered correctly, a summary, which lists the seven properties the student should now know about rocks, is presented.

Lesson 2 deals with rock names. It uses a clever algorithm to help you determine the name of each rock. Basically, you must answer three of four questions about the properties of the rock you wish to identify, and the program will then tell you its name.

Lesson 3 consists of 25 questions about the uses of rocks. Most of the questions can be answered correctly by using either the information presented by the program



Skull card 3 from the Teeth Microcourse.

or your own common sense. Finally, Lesson 4 presents 20 review questions, some of which are easy and straightforward, and others of which require you to really know your rocks. For example, you must be able to identify four rocks and know most of their properties to answer question 64:

Which rock is most like rose quartz?

a. obsidian b. sandstone

c. anthracite

Each of the first three lessons takes about 30 minutes to complete, and the review test takes about 15 to 20 minutes. We found the package to be interesting and motivating.

The Teacher's Guide contains information on the properties, identities, and uses of rocks as well as eight suggested classroom activities on rocks and minerals.

Prices and Information

All six microcourses are available for the Apple on disk, and all but Tracks and Dinosaurs are available for the TRS-80 Model III on tape or disk. Coins is also available on tape for the Atari.

The microcourses are priced as follows:

Rocks	$18
Set of materials	35
Coins	18
(Set of 13 coins, magnifier, magnet)	26
Metrics	28
Teeth (inc. 6 cards)	38
Dinosaurs	37
Tracks (inc. 10 cards)	43

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creative computing software evaluation

Mathematics Software For High School Students

Ronni and Harry Geist

Having served as a college learning resources specialist and a high school mathematics teacher, when we were given the opportunity to review the packages for this article, we were eager to learn the "state of the art" of high school mathematics software.

As you will see, some of what we found was superior, some mediocre. We also learned that just as you shouldn't judge a book by its cover, you can't judge software by its packaging or its price.

One suggestion: where a variety of programs are combined into a series, look at what is included on each disk before purchasing the entire package. We found that the quality of programming may vary significantly from disk to disk; in some instances, a disk may emphasize subject matter which may not be relevant.

Success With Math

CBS Software's *Success with Math* is a series of four mathematics tutorials designed to help students in the primary and secondary grades reinforce their math skills. For this article, we reviewed the two packages in this series for students on the secondary level: *Linear Equations* for grades 7 to 11 and *Quadratic Equations* for grades 9 to 12. (The other packages in this series are *Addition and Subtraction* for grades 1 to 4 and *Multiplication and Division* for grades 2 to 8.) Each of the packages we reviewed came with a small, brief User's Manual which provided a concise explanation of how the program operates.

creative computing
SOFTWARE PROFILE

Name: Success With Math
Linear Equations
Quadratic Equations

Type: Mathematics tutorial

System: Apple, Commodore 64, Atari

Format: Disk or cassette

Summary: Two tutorials offering drill and practice in the solving of linear and quadratic equations.

Price: $24.95 per disk
$19.95 per casssette

Manufacturer:
CBS Software, Inc.
One Fawcett Pl.
Greenwich, CT 06836
(203) 622-2500

Linear Equations

Linear Equations is a self-paced program designed to provide drill and practice in solving linear equations. Written by Don Ross, a former high school mathematics teacher, this package requires no intervention from teacher or parents.

Once the program is booted up, the user enters his name and is then greeted personally by the computer. (Although not indicated on the screen or in the documentation, the computer truncates the name after the first ten letters.)

Next, the general concept of the program is described: "I am going to help you practice solving equations in the form AX + B = C" and the user is asked if he would like to review the instructions. If the answer is "yes," the program displays a series of ten screens which includes a step-by-step example demonstrating how the program expects the equations to be solved.

The program presents the problems on a divided screen: the upper portion of the screen displays the equation to be solved, the middle part of the screen is the "work area," and the lower third of the screen lists the five rules to be used when solving the equations. The values for each equation are randomly generated; however, an algorithm is used to ensure that each problem will have a whole number as its answer.

To solve the equations, a series of specific steps must be followed. First, one of the five stated rules must be chosen:

1. Add the same term to both sides
2. Subtract the same term from both sides

3. Multiply both sides by the same term
4. Divide both sides by the same term
5. Simplify both sides

Since every question in this package is of the same format, the program mandates a specific sequence be observed when employing the rules. First, addition or subtraction; second, simplification. Next, multiplication or division; and finally, simplification again. Thus the program stresses a particular method of solution, and the sequence results in the equation being rewritten in the form $X = N$, N being the solution.

If the student makes a procedural error, the program indicates the "preferred" rule to be chosen and then asks him to choose a rule again.

Although this rigid sequence will solve these types of equations while providing students with a set routine to follow, it does not allow the student who sees an alternate method the opportunity to pursue it.

One nice feature which should be noted is the ability to choose either addition or subtraction (e.g., you can either add -7 or subtract 7) or multiplication by the inverse of the coefficient of X or division by the coefficient of X (e.g., multiplication by $\frac{1}{3}$ or division by 3), when solving a problem. Unfortunately, however, when multiplying by a negative fraction, the negative sign must precede the fraction. That is, $-\frac{1}{3}$ cannot be written as $\frac{1}{-3}$, although mathematically they are equivalent and technically speaking, $\frac{1}{-3}$ is the way the inverse of -3 would be defined.

In solving a problem, if the student makes a procedural error, the program indicates the "preferred" rule to be chosen and then asks him to choose a rule again. Should the student make a computational error, the computer also provides an explanation indicating what value should have been chosen and then offers another chance to enter the value.

If an error is made in simplification, the computer displays an explanation along with the correct answer and then requests that this answer then be entered by the student. On an error like this (which might in fact be a typographical error rather than a true mathematical error) we would have liked to have seen the computer give the user a second chance to enter the correct value before displaying it. Unfortunately, this program has no provisions for stopping a student from committing the same error over and over again, nor does it recommend that the student seek outside assistance (teacher, parent, tutor) after numerous errors have occurred.

The program keeps track of both procedural errors—choosing a rule which the program considers to be incorrect—and computational errors—performing calculations incorrectly. After a problem is completed, a tally of the number of errors for that problem is displayed along with a cute message (e.g., "May the force be with you.").

Once the user has completed the number of equations he has requested, the program terminates, and he is left in Applesoft. To attempt additional problems, he must rerun the program. This, of course, means that no cumulative statistics are maintained.

Linear Equations provides good drill and practice in solving one specific type of linear equation. The program encourages students to follow a fixed order of operations and reinforces these procedures. The random generation of equations provides a variety of problems in this format and offers immediate guidance and feedback when an error is made.

It should be noted, however, that in the study of algebra, linear equations can take other forms (e.g., $AX + B = CX + D$ or $C = AX + B$). Also, high school mathematics problems do not always have whole numbers as answers; fractions and decimals are a reality of life.

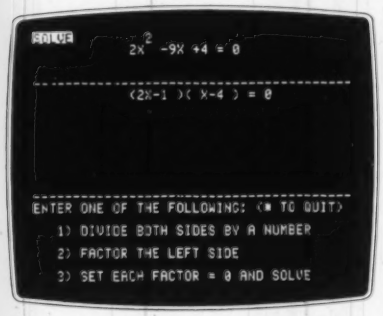
While this program accomplishes its stated goals effectively, its area of concentration is only a small part of the study of linear equations in today's mathematics curriculum.

Quadratic Equations

The highest level package in the CBS Software Success with Math series is *Quadratic Equations*, a comprehensive, self-paced tutorial similar in structure to *Linear Equations*. This package, written by the same author, develops skills in solving quadratic equations in the form $AX^2 + BX + C = 0$. As with the previous program, a series of instruction screens is available, if desired, when the program is first started. This program offers the user a choice between equations which are "Easier" and "More Difficult." The difference between these problems is that in the easier equations, the coefficient of X^2 is always 1, whereas in the more difficult equations, the coefficient is either 2 or 3.

As in the previous program, a specific sequence of rules must be followed: first, whenever possible, the user must divide both sides of the equation by a common factor. Following this, the left side of the equation must be factored and then each of the factors set to zero. The two resulting linear equations are then solved for X, yielding the solutions to the original equation.

The procedure for solving quadratic equations is virtually identical to that used in *Linear Equations*. Unlike *Linear Equations*, however, if the user factors the equation improperly, the program offers a second chance. Should he fail again, the program branches to a detailed description of how to factor the left side of the equation. This is a very useful feature and, in our minds, makes this package superior to *Linear Equations*. It should be noted, however, that repeated computational or procedural errors are allowed to continue endlessly, without recommendations to seek outside help.


SOLVE
2X² -9X +4 = 0
(2X-1)(X-4) = 0
ENTER ONE OF THE FOLLOWING: (■ TO QUIT)
1) DIVIDE BOTH SIDES BY A NUMBER
2) FACTOR THE LEFT SIDE
3) SET EACH FACTOR = 0 AND SOLVE

Quadratic Equations. Shows divided screen.

Overall, this package meets its stated objectives; however, again, there are other forms of quadratic equations which are not covered here, including non-factorable quadratic equations, quadratic equations with factors with a coefficient of X^2 larger than 3, and quadratic equations which are not in the standard format.

CIRCLE 416 ON READER SERVICE CARD

Algebra Series

Microcomputer Workshops produces a series of six computer programs on varying topics of high school algebra. This Algebra Series includes disks entitled *Equations, Solving Quadratic Equations, Simultaneous Linear Equations, Factoring Algebraic Expressions, Binomial Multiplication,* and *Graphing Linear Functions.* The first two programs in the series, *Equations* and *Solving Quadratic Equations,* are virtually identical to the packages distributed by CBS Software, except for very minor differences in format. (These packages were

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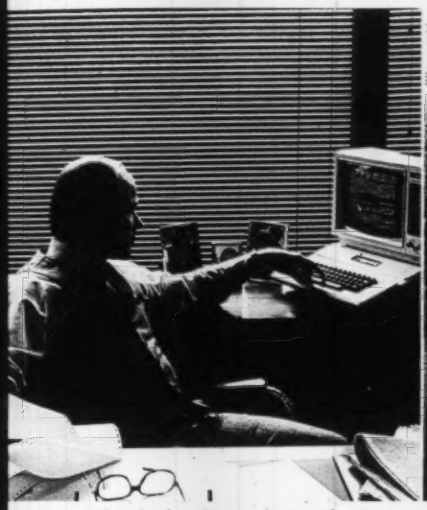

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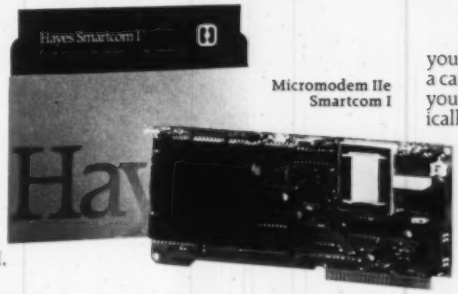

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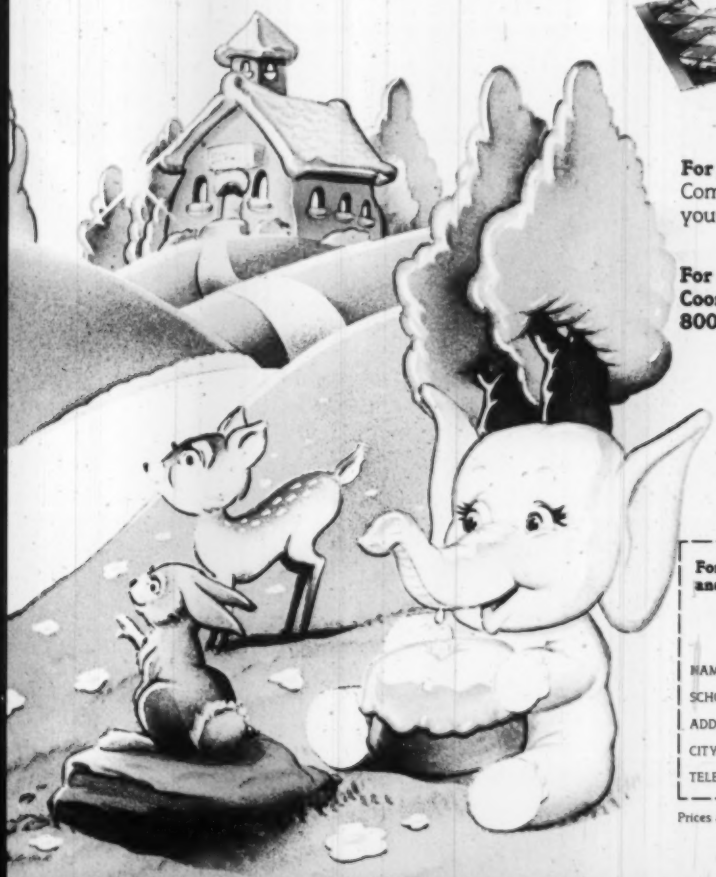
Hands On!™ (26-2539, $99) consists of two learning modules. Each one builds computer-related skills, as well as encourages creative self-expression.

Blackboard lets students write with beginning word processing aids, such as insertion and deletion of text. The student learns to create, save and access disk files, and share them with other students.

Color It lets children create and manipulate shapes in ways unique to computer art. The child can change colors, get mirror images, turn images upside down, scroll images across the computer screen and more. Pictures can be saved and later used to stimulate storytelling or for other class exercises.

Learning Managers on the disk allow the teacher to individualize instruction. To further enhance classroom activities, each learning module contains diskettes, spirit masters, activity cards, a gameboard, a poster and a teacher's guide. Both packages will run on the TRS-80 32K Extended BASIC Color Computer 2 disk system.



For more information, stop by your nearest Radio Shack Computer Center, participating store or dealer. Or contact your Radio Shack Regional Educational Coordinator.

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The two equations are displayed as line graphs showing that the solution is the point of intersection of the two lines.

written by the same author who wrote the CBS Software.)

Although not as slickly packaged as the CBS Software product, the documentation with the packages from Microcomputer Workshops is more explicit and includes objectives, a program description, and a demonstration problem, although we did find a couple of typographical errors in their photocopied pages.

All of the programs in this series follow the structure described in the previous section.

Simultaneous Linear Equations

In the *Simultaneous Linear Equations* program, the student is presented with two equations, each in the form AX + BY = C and asked to solve for X and Y. All of the coefficients are integers and all of the solutions are integers which fall into the range of -5 to +5. To solve the equation, the user must first transform one or both of the equations so that the coefficients of one of the variables are equal or opposite. Then the equations must be added or subtracted to eliminate one of the variables. The resulting equation must be solved for the remaining variable and that value substituted in either of the original equations to determine the value of the other variable.

Once the user has solved the equations, the program performs checks in both equations to show that the values are correct. In addition, the two equations are displayed as line graphs showing that the solution is the point of intersection of the two lines. This is an excellent feature of the program. An error tally is maintained for the following types of errors: eliminating a variable, solving linear equations, and computational errors.

creative computing
SOFTWARE PROFILE

Name: Algebra Series
Equations
Solving Quadratic Equations
Simultaneous Linear Equations
Factoring Algebraic Expressions
Binomial Multiplication
Graphing Linear Functions

Type: Mathematics tutorials with drill and practice

System: Apple; Equations and Solving Quadratic Equations available for Atari, Commodore 64/Pet, IBM PC, and TRS-80

Format: Disk and cassette

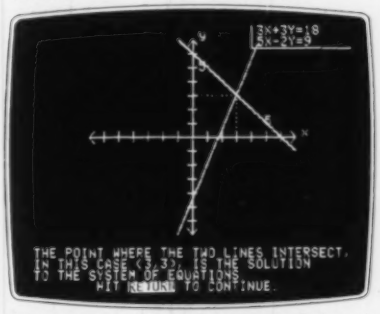
Summary: Mathematics tutorials with drill and practice on a range of algebraic skills.

Price: $150 for set of six disks (Apple only)
Individual disks—$24.95 and $29.95
Individual cassettes—$20 and $24.95

Manufacturer:
Microcomputer Workshops
225 Westchester Avenue
Port Chester, NY 10573
(914) 937-5440

Simultaneous Linear Equations. Original problem.

Simultaneous Linear Equations. Problem solved.


3X+3V=18
5X-2V=9
THE POINT WHERE THE TWO LINES INTERSECT,
IN THIS CASE (3,3), IS THE SOLUTION
TO THE SYSTEM OF EQUATIONS
HIT RETURN TO CONTINUE.

Simultaneous Linear Equations. Point of intersection is the solution.

Factoring Algebraic Expressions

The *Factoring Algebraic Expressions* program offers students practice in factoring algebraic linear and quadratic expressions. The user is given the choice of five different types of problems: Easy Quadratic Trinomials, Hard Quadratic Trinomials, Difference of Two Squares, Common Factor, or a Mixture of the above types.

This program offers the user the option of assistance if he is unsure of what to do. For example, in factoring a trinomial, by typing H for HELP, the user can test several factors without having the attempts count against him. The program also displays the product of the factors so that the user can compare his work with the original expression.

If the user becomes totally lost, typing S for SOLUTION initiates a routine by which the computer leads him step-by-step through the factoring process. Once the computer completes this explanation, the user is returned to the original problem where he is required to complete it on his own.

This program offers the user the option of assistance if he is unsure of what to do.

These features are extremely useful and present the student with a clear explanation of how to solve these problems without having to seek outside assistance or refer to a textbook. This helps make this program completely self-contained, and would have been a welcome feature to the other programs reviewed thus far.

Binomial Multiplication

The first thing we noticed about the *Binomial Multiplication* package was that the lettering appears on the screen in both upper- and lowercase, instead of all capitals. This was a welcome relief to our eyes! Along with the standard set of instructions, this package includes a short lesson on how to perform Binomial Multiplication using the FOIL method. (FOIL is a mnemonic which stands for First, Outside, Inside, Last, and describes the standard way in which this skill is taught.)

The descriptive lesson effectively uses the high-resolution screen and employs

arrows, circles, and rudimentary animation to illustrate how the FOIL method is performed and to explain why it works. This explanation is well-constructed; it is easy to follow and clearly written and could certainly serve as a student's first introduction to this topic.

The package also provides drill and practice exercises using the FOIL method. The user is led through the problems step-by-step. Should an error be made, the program allows for a second chance before offering correction and guidance in solving the problem. In this package, an error summary of Multiplying Terms and Combining Like Terms is maintained by the computer.

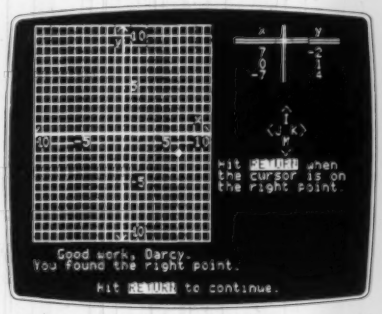
Graphing Linear Functions

The final package in this series, *Graphing Linear Functions,* gives the student practice in solving equations and locating and plotting points which will appear on the graph of the equation. In this program, equations can appear either in the form $Y = MX + B$ or in another form which must be solved for Y.

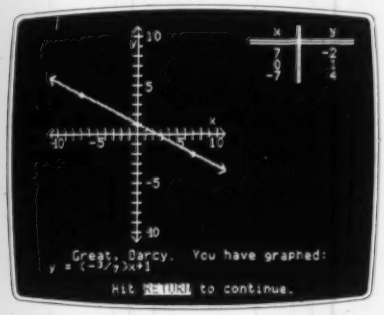
Once the equation is in the required format, it is necessary to locate three points which satisfy the equation. To do this, values for X must be chosen so the computer can calculate the corresponding value of Y. All values must be within the range of -10 to +10. Also, only whole numbers may be used; this is an unfortunate restriction, since it is possible to graph points with fractional coordinates.

This one package teaches many skills: solving equations, selecting points, plotting points, and graphing the equation.

After three acceptable points have been found, a 20 x 20 coordinate grid is drawn on the screen, and the user must plot each of the points. A flashing X-cursor, centered on point (0,0) appears and can be moved using the I, J, K, M keys. Pressing the RETURN key plots a point on the graph. If the cursor is not in the proper location when RETURN is pressed, the computer provides another chance to plot the point and offers assistance in the form of either Sound or Silent Clues. The Sound Clue is a beep whose pitch becomes higher as the cursor approaches the correct location; the Silent Clue is a screen display of the coordinates of the point where the cursor is located. Both of these are very innovative and useful features.



Graphing Linear Functions. Points as you plot them on grid.



Graphing Linear Functions. Computer-generated line graph.

After all three points have been plotted, the X and Y axes are redrawn with tick marks instead of grid lines, and the three points and the line connecting them are drawn. In this program, the following types of errors are automatically tallied by the computer: Solving for a Variable, Selecting Points, Plotting Points, and Calculation Errors.

This package is very well designed, again using the hi-res graphics screen for lowercase video and smaller numbers when fractions appear in the equations. As in the other packages, a strict order for solving and graphing the equations is required; in this particular package, this structure works quite well. This one package teaches many skills: solving equations, selecting points, plotting points, and graphing the equation. *Graphing Linear Equations* is a very useful learning tool.

The complete Algebra Series of six disks is available only for the Apple; the first two disks in the series, *Equations* and *Solving Quadratic Equations* are also available for the IBM PC, TRS-80, Commodore 64/Pet, and Atari computers.

CIRCLE 417 ON READER SERVICE CARD

Master Math

Master Math, a six-disk package from PMI Incorporated, is a mixed bag of mathematical topics. This series can be purchased as a complete set, or specific disks may be purchased individually. The documentation with this package claims that "*Master Math* contains every program you will ever need to get you, your pupils, or your son or daughter through a high school math course;" however, we found this package to fall short of its promise. Of the six disks in the package, only the first three offer instruction and tutorials on various math skills; the last three disks provide a series of test problems which encompass a wide range of math topics.

Although PMI is a Maine-based company, this series was apparently written by an Englishman. As a result, some of the terminology differs from that which is normally taught in American schools (e.g., the American trapezoid is referred to as a trapezium and the American parallelopiped is the British cuboid), and some of the written symbols are not those commonly used here in the States (e.g., set signs appear as parentheses instead of "curly brackets" or braces). These factors could be a source of confusion to students.

Numbers, Logs, and Antilogs

The first disk in this series focuses on *Numbers, Logs, and Antilogs.* This disk begins with an extremely basic concept (counting the number of digits to the left and right of a decimal point in a number) and goes on to introduce the concept of logarithms and the use of a table to determine the logarithm of a number. This is followed by a discussion of antilogarithms and how to use the antilog table, and then the package teaches how to use logarithms in calculations.

We found several problems with this disk: First, the examples given on the screen use a logarithm table that is not

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SOFTWARE PROFILE

Name: Master Math

Type: Mathematics tutorial with drill and practice

System: Apple, Commodore Pet, CBM 8032

Summary: Covers a wide spectrum of topics; 3 disks of instruction, 3 of math tests.

Price: Complete package—$150
Individual disks—$30

Manufacturer:
PMI Inc.
P.O. Box 87
Buckfield, ME 04220
(207) 336-2500

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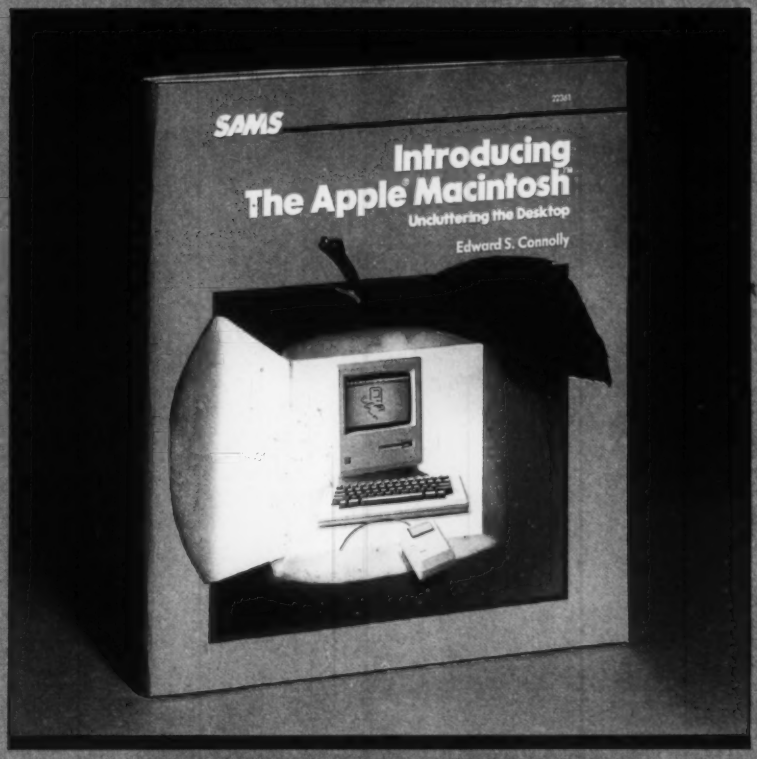

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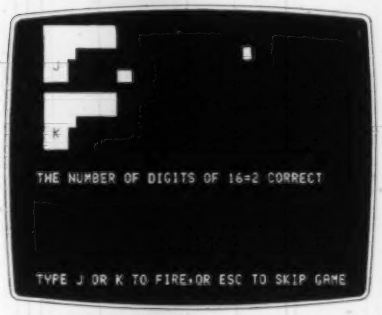


Master Math. How Many Digits with primitive arcade game.

standard for American students—nor is it the same table included in the documentation! This is unfortunate and could serve as yet another source of confusion for students trying to learn these skills.

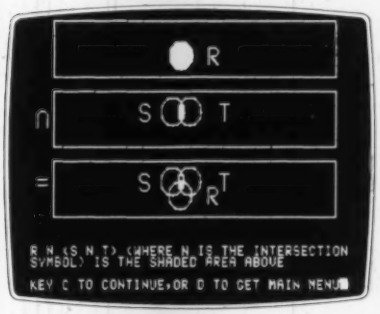
Second, the disk we tested did not appear to work properly. Although the documentation indicates that there are lessons on powers and roots on the disk, we were unable to access these lessons.

Finally, the major emphasis on this disk, calculating with logarithms, is a topic which has declined in importance in the modern day math class, with the advent of calculators and computers. While logarithms are still taught today, the emphasis is on theory, rather than calculation.

Modern Algebra And Set Theory

The second disk focuses on *Modern Algebra and Set Theory.* On the first part of the disk, explanations of the various set functions (Union, Intersection, Complement, and so forth) are given in text, without graphic representation. In addition, several of the notations used to indicate these functions, such as the intersection of two sets ($\cap$), subset ($\subset$), and the empty set ($\varnothing$), do not appear in the screen explanations. Instead, the user is instructed to refer back to the documentation to determine what these symbols look like. This, we feel, is a poor practice.

Units on the second half of the disk use hi-res graphics to demonstrate these same functions visually. We found this to be a distinct improvement; however, it would have been far more effective to integrate these graphic representations with the textual descriptions.



Master Math. Venn Diagrams.

On the first two disks, an attempt is made to motivate students by rewarding correct answers with a series of games which can be played only if a correct answer is given to a problem. While the concept of reward is a good one, the games supplied are extremely primitive and would not, we believe, be especially appealing to the level of student for whom this package is designed.

Areas And Volumes

The best part of this series is the third disk, which deals with *Areas and Volumes.* Using the hi-res graphics screen, through the use of extremely well-designed geometric figures, the four lessons on this disk take the student through the formulae for determining the area and volume of simple geometric shapes (square, rectangle, triangle) to more complex shapes (parallelogram, trapezoid, and circle) and then to arcs, spheres, cylinders, prisms, parallelopipeds, pyramids, and cones.

Master Math. Volume.

Each lesson on the disk has an accompanying review test, and the computer keeps track of the user's performance. Another nice feature on this disk is that problems are not programmed to come out evenly; as areas and volumes are figured, the user needs a pencil and paper for the computations, and he must perform various calculations to derive the correct answers.

Disks four through six in this series consist of examination problems on a variety of topics. Disk four includes such topics as: factoring algebraic expressions (incorrectly referred to as *equations* in the documentation), simple and compound interest, statistics, trigonometry, differentiation, percentages, number bases, exponents, and profit and loss calculations.

Topics on disk five include: simplification of algebraic expressions, ratio and proportions, properties of polygons, graphing linear and quadratic equations, statistics, solving algebraic equations, vectors, exponents, geometry, matrices, number bases, and solving simultaneous equations.

Disk six includes test problems on: geometry of a straight line and triangle, lowest common multiple, mapping functions, calculations with fractions, congruent triangles, algebraic functions, and currency conversions. The documentation for all of these disks includes brief descriptions of each of these topics and, for some topics, supplies useful diagrams which do not appear on the screen.

The test programs on these three disks all follow the same basic format. The user is asked a question on the given topic. If an incorrect answer is entered on the first try, a hint is provided as assistance. If an incorrect answer is entered again on the second try, a brief explanation of the method for solving the problem is given along with the correct answer. Scores are displayed after each group of five questions is answered; however, no cumulative tally is maintained.

These three disks are useful for drill and practice, but they assume that the user already has a firm grasp on the subject matter being tested.

CIRCLE 418 ON READER SERVICE CARD

Algebra Arcade

In our opinion, the best package of those we reviewed is *Algebra Arcade,* a new program from Wadsworth Electronic Publishing Company. This program was created by four mathematics professors under a National Science Foundation grant to develop computer programs for use in the classroom and illustrates how the computer can be cre-

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SOFTWARE PROFILE

Name: Algebra Arcade
Type: Educational game
System: Apple, Atari, IBM PC, Commodore 64
Format: Disk
Summary: An innovative educational arcade game to teach graphing of algebraic equations.
Price: $49.95
Manufacturer:
Wadsworth Electronic Publishing Company
8 David Dr.
Belmont, CA 94002
(415) 595-2350

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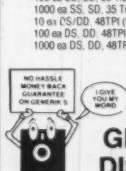

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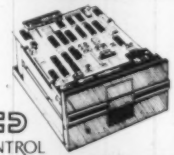

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DATAMOST, Pig Pen/Space Strike, ea.		$ 30	$ 22
DAVIDSON, The Speed Reader II		$ 75	$ 49
INFOCOM, Deadline or Suspended, ea.		$ 50	$ 33
Zork I or Zork II or Zork III, ea.		$ 40	$ 27
* **INSOFT**, Mystrix, Wordtrix or Quotrix ea.		$ 35	$ 29
MICRO LAB, Miner 2049		$ 40	$ 29
MICROSOFT, Flight Simulator		$ 50	$ 33
MONOGRAM, Dollars & Sense		$ 165	$ 110
PBL CORP., Personal Investor		$ 145	$ 99
SOFTWORD SYSTEMS Multimate		$ 495	$ 295
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CIRCLE 126 ON READER SERVICE CARD

atively programmed to help make learning less tedious and more fun. The package combines the mathematical skills of graphing equations in algebra with the excitement of an arcade game.

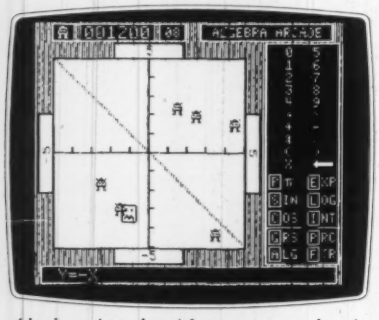
Algebra Arcade is designed to teach students to plot equations on a coordinate system. The user can choose which type of equation "family" to practice: lines, quadratic equations, third degree equations, or equations involving the sine, cosine, tangent, exponent, logarithm, integer, absolute value, and arctangent functions. The user builds the equation he wants, and the computer graphs the equation on the display screen.

What distinguishes this program from those previously described is the way in which the topic is presented. After being shown a set of coordinates, a group of creatures called "algebroids" scurry onto the screen, scattering to various locations on the grid.

It is the user's task to come up with an equation which, when plotted, will pass through as many algebroids as possible. After the graph is plotted, a "whirlwind" follows the path of the graph, "knocking off" any algebroids through which it passes. Points are earned for each algebroid hit: 200 for the first, 400 for the second, and so on. However, the graph plotted must not hit the "shifty-eyed ghost" who also appears on the grid; if it does, the ghost turns into the dreaded Graph Gobbler who munches the equation, leaving the player scoreless.

The game can be played alone, or one-on-one. If, when playing against an opponent, the Graph Gobbler appears, the offending player is sent to "The Committee" which decides, randomly, if he should be penalized one turn, three turns, of if he can get off without losing a turn.

Each player (in both the one- or two-player games) starts off with ten turns; an extra turn is added by scoring 10,000 points, clearing all ten algebroids, or by finding the invisible Graph Gobbler. (Oh yes, we forgot to mention that when the tenth algebroid is eliminated, the Graph Gobbler "has a fit and disappears.")



Algebra Arcade. After two rounds, six algebroids still remain with the ghost (lower left quadrant).

At that time, the player has up to three tries to find the invisible Graph Gobbler by graphing equations. If one graph finds the hiding place, the player scores an additional 1000 points and earns an extra turn. But, if the player misses after all three attempts, he is sent to The Committee. When both players have used up all their turns, the one with the highest score is named the Algebra Arcade champion.

The program has several features which make it more enjoyable and challenging.

The program has several features which make it more enjoyable and challenging. It can be played either under keyboard control or by using a joystick; this is the first question asked after the program is loaded. The program includes a Features Menu which can be used to change the characteristics of the game. Specifically, this menu includes the following options:

- Saving the current game on disk to continue it at a later time.
- Changing the coordinates of the grid: They are preset at -5 to the left and bottom and +5 to the right and top. They can be reset to any values, seven characters or less in length, which may include a decimal point or π.
- Selecting certain equation families. The families include: the linear equation $Y = MX + B$, three different representations of a quadratic equation, a third degree equation, and an equation containing a sine function. An additional option allows you to build your own equation, using allowable symbols and functions which appear in a table on the display screen.
- Playing the game with or without the Graph Gobbler.
- Testing the length of a graph, to help determine the use of long, oscillating graphs which could make the game quite easy (although finding such graphs is no easy feat). This length test can be turned on or off.
- Adding an internal timer to encourage quick thinking: if this option is chosen, the regular score is multiplied by a factor, dependent upon how quickly the equation was entered. The timer can be set to several speeds, or not used. If it is used, the algebroids change positions on the screen between turns. In an untimed game, algebroids not eliminated return to the same position at which they appeared during the previous turn.

If desired, these features can be changed as the game progresses. The options of coordinates and types of equations allow for a wide range of difficulty. High school freshmen can use this program to learn to plot straight lines, while seniors and even college students could use it to study the characteristics of higher degree, more complex equations. Thus, the package can be used by a student over a period of years, as his knowledge of mathematical concepts increases.

An additional option of the program is the use of a Practice Field on which equations can be tested before they are actually plotted on the playing field. In this way, a player who is just learning these skills can specify several different equations to be plotted on the practice field. By choosing values wisely, the player can gain valuable knowledge as to how various equations appear on the grid, so that when he chooses an equation to be plotted on the playing field, the number of points scored can be maximized.

The package can be used by a student over a period of years, as his knowledge of mathematical concepts increases.

The package includes a 26-page User's Guide that is professionally written and profusely illustrated. Included in the manual are: a quick description of the program, containing enough brief instructions to start a new user at play immediately; a detailed set of instructions, clearly describing all of the various options available to the user (including descriptions of how to enter equations, allowable symbols, and how the game is scored); suggestions on graphing equations and sample equations to try on the practice field; playing tips; and illustrations of some "interesting equations." Finally, there is a brief list of references and a bibliography for further study.

This package demonstrates what good educational software can and should be: creative, enjoyable, and a valuable learning experience. We recommend *Algebra Arcade* highly.

CIRCLE 419 ON READER SERVICE CARD

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CIRCLE 294 ON READER SERVICE CARD

Five Packages Evaluated and Compared

creative computing software evaluation

Preparing for the Scholastic Aptitude Test

Owen Linzmayer

Several times a year, tens of thousands of high school students converge on cafeterias, classrooms, and auditoriums to engage in what some would call the most harrowing experience of their lives—taking the SAT. The Scholastic Aptitude Test is a standardized multiple-choice test that is used primarily by college admissions directors to estimate how well the applicant will do in college courses. While other factors such as class ranking, course grades, and personality come into play, the SAT score remains highly influential in the admissions decision-making process.

If your school system has a computer, you might suggest that $300 spread over the college-bound portion of the senior class would be a worthwhile and not unreasonably large investment.

To help students prepare for this test, many book publishers have introduced generalized guidebooks on how to take such tests. Others publish huge tomes replete with sample SAT-like self-administered examinations. Many local schools offer expensive night courses with qualified instructors who drill students with questions and are available to clarify perplexing areas of study.

For students who have access to personal computers, there is another choice: software packages designed specifically to help them prepare for the SAT. The five packages we examined range in price from $20 to $300. What is the difference? What do you get for $300 that you don't get for $20 or vice versa? Are the more expensive packages worth the extra money, or can a cheaper package do the job just as well? These are the questions we would ask if we were trying to prepare a student to take the SAT. They are the questions you should ask. What follows are the answers we found.

Krell's College Board SAT

The first thing that you will probably notice about Krell's package is the whopping $300 price tag. That in itself might be enough to send you looking elsewhere. If you survive the initial shock and take the time to get some hands-on experience with the program, you will discover one of the best preparatory packages around.

You may be saying to yourself "I can't possibly afford to spend $300 on one program!" Bear in mind, however, that several of these packages are aimed not only at the individual consumer, but also at schools with computer systems. If your school system has a computer, you might suggest that $300 spread over the college-bound portion of the senior class would be a worthwhile and not unreasonably large investment.

Unfortunately, the Krell documentation booklet specifically forbids the purchaser of the program to give or lend it to a student for use on his own computer. On what grounds this prohibition is made and how Krell enforces it we do not know. What we do know is that this policy effectively closes the door on one way in which schools which do not have computers could possibly justify the purchase of this excellent program.

The Krell package includes 10 program disks covering subjects such as vocabulary, math, sentence completion, analogies, and the Test of Standard

creative computing
SOFTWARE PROFILE

Name: Krell's College Board SAT

Type: SAT preparation

System: Atari (reviewed), Apple, TRS-80, Commodore 64, IBM PC

Format: 10 disks

Documentation: Terse instruction manual and informative scholarship booklet

Summary: Extensive and expensive

Price: $299.95

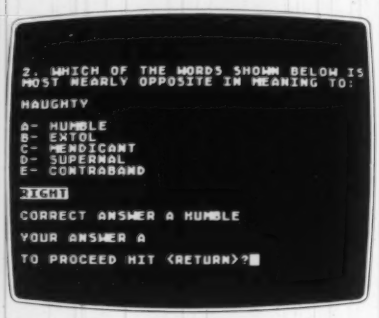
Manufacturer:
Krell Software Corp.
1320 Stony Brook Rd.
Stony Brook, NY 11790
(516) 751-5139

Written English (TSWE); 47 pages of documentation; and the 6th edition of *The As & Bs Of Academic Scholarships*, an extremely useful book in this day of limited federal funding.

Like most of the multi-disk packages, the Krell program follows the same general format in each of the sections. The first option you are given is whether you want to engage the automatic learning feature. Using this feature increases the probability that you will be asked questions similar to those with which you have previously had difficulty. This feature is especially useful as it keeps the user from becoming bored with questions of a type that he has already mastered, and drills him instead on more difficult ones.

Vocabulary

To give you a taste of the Krell package, let's look at one of the vocabulary disks. After selecting the automatic learning feature, you choose the number of questions (1-1000) you wish to answer. The computer accesses the disk for a second and then comes back with the first question. It displays a word and



asks that you select from the five possible answers the word that is, for example, most opposite in meaning. If your choice is wrong, you are told immediately and shown the correct answer.

After every question you are shown your current score. After completing the desired number of questions you are presented with the final results, and you may save your "learning coefficients" to disk for use with the automatic learning feature.

In all, there are more than 8000 questions on the two vocabulary disks. They are presented in a random fashion so that you cannot become familiar with the subject matter simply by rote.

Mathematics And TSWE

The math program gives you the option of viewing how the correct solution was derived after you input your answer. Then, if you like, you can choose to attempt another similar question.

This type of instant reinforcement is also found in the TSWE. After you determine which part of a sentence contains the grammatical error, if any exists, the computer gives a complete explanation of what was wrong with the sentence in question and names the type of error that was committed.

Documentation

The documentation contained in the small format, spiral bound booklet that serves as documentation for the program can best be described as scanty. Outside of a few paragraphs of specific notes for users of the different machines for which the package is available, the contents of the booklet consist entirely of supplementary material and sample questions.

We would have given the documentation a higher grade if it had included even a few paragraphs on test taking strategies or suggestions for study in areas in which you might find yourself lacking.

Summary

On the whole, however, *Krell's College Board SAT* exam preparation series is a fine package and worthy of commendation. The people at Krell are so sure of the worthiness of this program that for a limited time they actually guaranteed that test takers would increase their combined scores by at least 70 points.

Unfortunately, the high price will probably keep it out of the hands of most individual users.

CIRCLE 420 ON READER SERVICE CARD

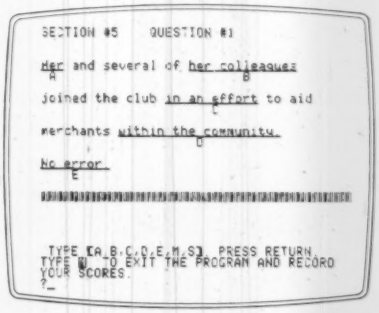
Mastering The SAT

The second package we examined was *Mastering the SAT* from CBS Software which sells for $150. Are all good SAT packages expensive? We began to wonder.

This package was developed in cooperation with the National Association of Secondary School Principals (NASSP) and it shows; *Mastering the SAT* is both well designed and pragmatic.

Mastering the SAT is a four-disk package that is designed to strengthen basic learning skills. There are three operational modes: the Examination Mode, the Instruction Mode, and the Skill Builders Mode. You are encouraged to begin by taking two simulated SATs to establish your ability in each of the areas of study: math, verbal, and TSWE. For the sake of comparison, let's take a look at what the verbal test has to offer.

The verbal test is broken down into four sections, each of which is separately loaded from disk and presented in two parts; opposites, sentence completion, analogies, and reading comprehension. In each section of the test you are presented with a question and provided with five possible answers. You must complete all four sections before your test will be scored.



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SOFTWARE PROFILE

Name: Mastering the SAT
Author: National Association of Secondary School Principals
Type: SAT preparation
System: Apple (reviewed), Commodore 64, IBM PC, and PCjr
Format: 4 disks
Documentation: Thorough; focuses on strategy
Summary: The best of the bunch
Price: $150
Manufacturer:
CBS Software
One Fawcett Pl.
Greenwich, CT 06836
(203) 622-2500

Upon completion, answers are scored and analyzed. This analysis is very thorough and points out your specific areas of weakness, right down to what types of questions presented problems. A nice feature is that you can get a hardcopy of the analysis by asking the program to send it to the printer as well as the video monitor. Armed with the diagnosis of your test, you then enter the post-test mode which provides an explanation of each question for which you request clarification.

Once you realize where you went wrong and why, you can use the skill builder modules to strengthen your ability to handle those questions in the future. Within each module there is a large selection of questions which are presented in a more or less random fashion, though some repeating of questions is evident. We were particularly impressed with the thorough explanations and di-

agrams which accompany most problems —especially the math questions. This feature helps you to concentrate on concepts rather than just correct answers.

Documentation

The 148-page, small format, perfect bound documentation booklet begins with general instructions for using the program. Following are 16 pages of test taking strategies, focusing on the various types of questions and skills used in the SAT.

The remainder of the booklet consists of the two simulated SAT tests, their answers, and supplementary material for the mathematics section of the computerized questions.

The tone of the writing in the booklet seems carefully calculated to give the reader confidence without inspiring panic. The suggestions for approaching various types of questions are concrete, and the sample questions increase in difficulty as you become familiar with each concept.

Summary

We recommend *Mastering the SAT* very highly. The price is high for individual users, but should present no problem for most school districts. Nor could we find any prohibition that would prevent schools from lending the program to students.

The name of the program is significant. CBS wants you to *master* the material in the SAT through understanding rather than by rote. We like that approach.

CIRCLE 421 ON READER SERVICE CARD

Preparing For The SAT

Preparing for the SAT by Program Design, Inc. seems to be a package in search of an identity. Parts of it are well done, while other parts lack the professional approach apparent in most of its competitors. The program seems to be trying to be tutorial rather than just a series of questions and answers, a goal of which we certainly approve, but somehow it falls short.

The program takes advantage of the graphics and sound capabilities of the Atari to the detriment of the package. The large, colorful, flashing words and numbers and the sound explosions which "reward" correct answers seem better suited to an elementary school level program than one aimed at presumably serious high school students.

Joystick input also seems out of place. Some of the math sections require you to choose your answer with the joystick, an exercise we found distracting and frustrating. The program, which is written in Basic, does not check for input from the joystick often enough, so each move of the cursor requires more than a few taps on the stick. PDI, it seems, is a victim of the "just because it can be done doesn't mean it ought to be done" syndrome. We prefer the straightforward keyboard input approach taken by the other programs.

In the math section, PDI comes closest to its goal of preparing the student for the SAT in a tutorial manner.

Documentation

Preparing for the SAT comes with six disks, two professionally produced large format manuals, and an audio cassette. Written by John Victor, *Making the Grade* is a 34-page book that presents useful information about how the SAT and other aptitude tests are designed, as well as specific test-taking procedures to help improve your scores. The other book contains the instructions and is the best set of documentation we saw in preparing these reviews.

Both books offer specific suggestions and strategies for test taking as well as pragmatic instructions for attacking a myriad of different kinds of questions and problems.

The audio cassette is used as an adjunct to some of the math exercises and as the base for a tutorial on Taking Aptitude Tests. We found the tutorial math material especially useful, but were offended by the word *casette* on one of the instruction screens.

creative computing

SOFTWARE PROFILE

Name: Preparing For The SAT And Other Aptitude Tests

Authors: John Konopa, John Victor, Stephen Keegan, Frank Salamon, Jenny Tesar

Type: SAT preparation

System: Atari (reviewed), Apple

Format: 6 Disks

Documentation: The best we have seen

Summary: Of uneven quality

Price: $119.95

Manufacturer:
Program Design, Inc.
11 Idar Ct.
Greenwich, CT 06830
(203) 661-8799

Vocabulary

There are four areas of study: vocabulary builder, analogies, number series, and quantitative comparisons. As with the other packages we reviewed, we began with the vocabulary section, which consists of two parts, the second of which is considerably more difficult than the first. Each part contains ten modules comprised of 40 questions each. You can choose the number of questions (1-40) you wish to try at any given sitting. The questions always appear in the same order, although you can choose which one you want to start with.

As in all of the other packages, a word is presented and five possible answers are shown. Depending on the type of question, you must choose the word that is opposite or similar in meaning to the target word. If you guess incorrectly, you continue guessing until you get it

right. The sound effects are the same, whether you respond correctly on the first or fifth try. When you finish, or quit, the screen clears and the results are tallied up.

Here, again, we found a misspelled word among the choices in one of the first questions we saw.

Mathematics

We found the math section of much more use than the vocabulary modules. The documentation accompanying the math questions is quite good, and the questions presented are very typical of the questions asked on the actual SAT.

In the math section, PDI comes closest to its goal of preparing the student for the SAT in a tutorial manner. You study by listening to the tape and referring to the explanations in the book and then answering appropriate questions.

Summary

As we said before, *Preparing for the SAT* seems to be having an identity crisis. It tries to be a serious educational package, but it acts as if it were an

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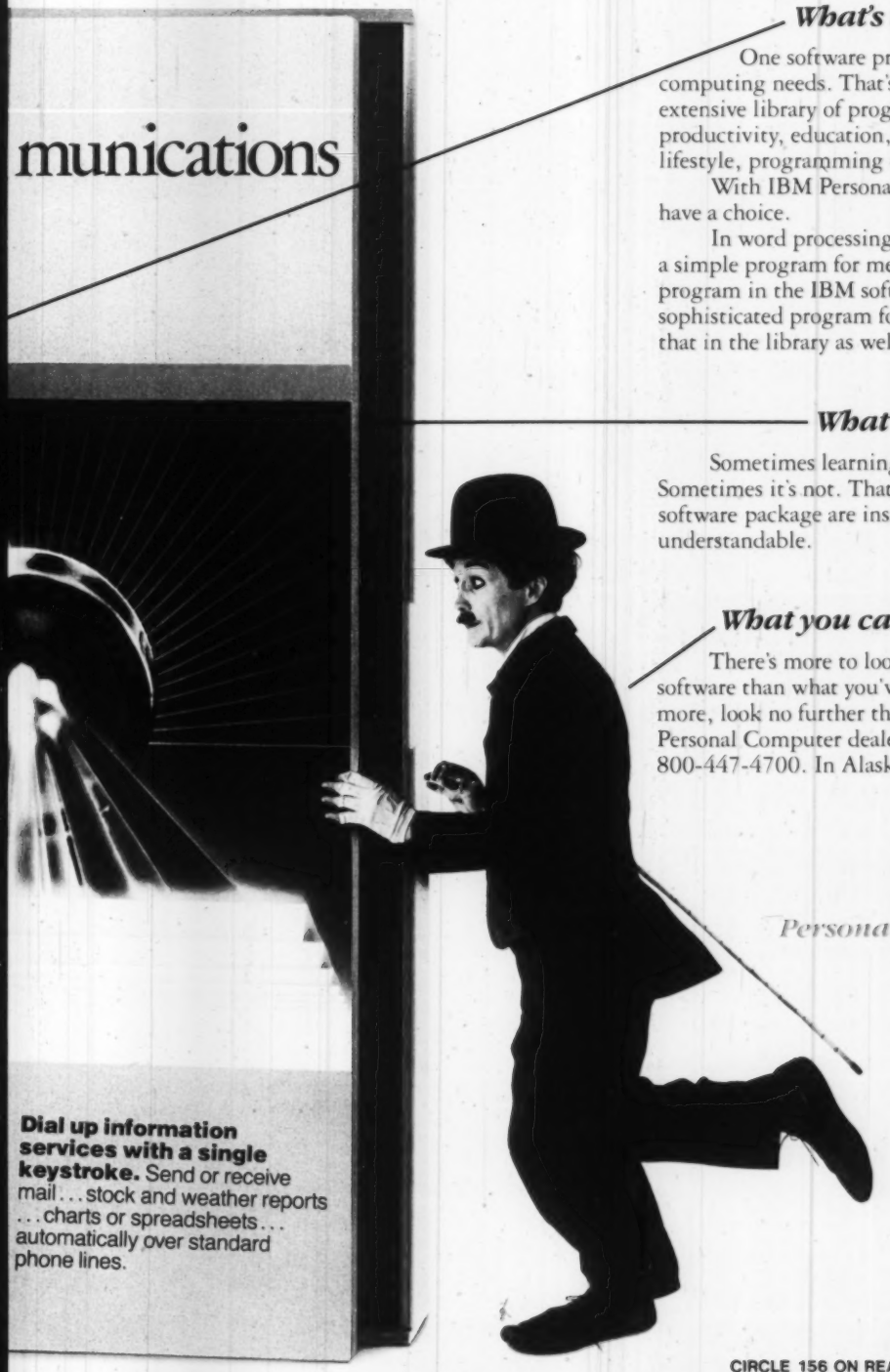
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CIRCLE 156 ON READER SERVICE CARD

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CIRCLE 184 ON READER SERVICE CARD

elementary school program upgraded for use by teenagers.

The documentation is excellent, but the quality of the accompanying program does not do it justice, and we find inexcusable the presence of misspelled words in a program of this sort. How much faith can you have in a program that doesn't know how to spell cassette?

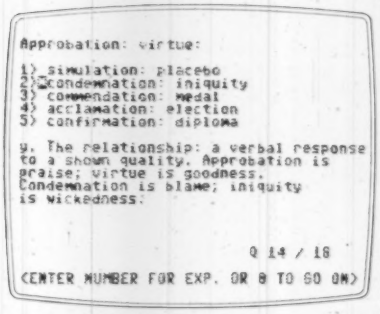
CIRCLE 422 ON READER SERVICE CARD

SAT Math I And SAT English I

Providing a marked contrast to the costly packages reviewed above, the Micro Learn SAT programs cost only $30 each. Micro Lab President Stanley Goldberg says it is not his goal "to make a huge profit on our educational titles." That is a refreshing thought, indeed.

The packages are sold separately, but they are so similar that we will review them together. Each program disk is double-sided, and divided into two modes: tutorial and testing.

The testing mode is fine, but we prefer the tutorial mode because it offers instantaneous response. In fact, the tutorial mode is actually the same as the testing mode with the exception that the correct answers and explanations are


Approbation: virtue:
1) simulation: placebo
2) condemnation: iniquity
3) commendation: medal
4) acclamation: election
5) confirmation: diploma
y. The relationship: a verbal response to a shown quality. Approbation is praise; virtue is goodness. Condemnation is blame; iniquity is wickedness.
Q 14 / 18
(ENTER NUMBER FOR EXP. OR 0 TO GO ON)

disclosed immediately after you enter your answer. We found that the sooner we learned whether we were right or wrong the better we were able to remember the correct concept.

Both packages present questions and answers in the multiple-choice format. As in the more expensive SAT packages, an explanation is given for each answer along with the correct response. This is the strongest aspect of the Micro Learn approach.

Documentation

The documentation for both programs is the same except for the two pages which discuss the content of the specific disk. Each package contains a four-page leaflet which limits itself to instructions for using the program. A two-sided insert describes the objectives of the program and the kinds of questions that are included.

There is absolutely no tutorial material or test taking strategy in the documentation—but what do you want for $30?

Summary

Our only significant criticism of the package is the time spent accessing the disk. We had heard rumors that the Commodore 64 disk drive was slow, but we had no idea what lethargy could be until we ran this program. After every question the disk drive is accessed for the next set of questions and answers, and you just sit and wait for between 10 and 30 seconds! But time is the price you pay for not having to pay the monetary price of most of the other packages. We also assume that the problem is less pronounced in the Apple version, since its disk drive is so much faster.

All things considered, the Micro Learn software compares very favorably with its higher priced competitors. The content is similar, and the price puts the programs within easy reach of individual users. We recommend the Micro Learn packages with the single caveat that at least the Commodore version is not for the impatient.

CIRCLE 423 ON READER SERVICE CARD

creative computing

SOFTWARE PROFILE

Name: SAT English
SAT Math I

Author: Eileen Shapiro

Type: SAT preparation

System: Commodore 64 (reviewed), Apple

Format: 1 double-sided

Language: Basic

Documentation: Barely adequate

Summary: A very good value, but slow

Price: $30 each

Manufacturer:
MicroLearn
2699 Skokie Valley Rd.
Highland Park, IL 60035
(312) 433-7550

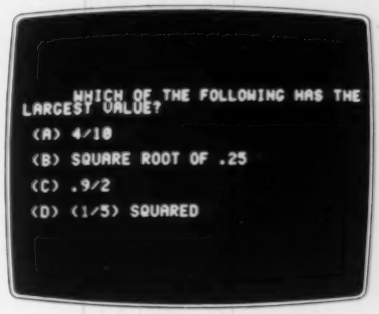
Preparing Your Child For the SAT/Math

We discovered Know How software at the Alpha Software booth at the Consumer Electronics Show. Their line of no-frills educational software sells for $14.98 and $19.98—surely a bargain if the content were up to par. So we brought home a package and had a look.

Unfortunately, *Preparing Your Child for the SAT/Math* comes under the category heading of Also Ran.

The documentation, which fits on a file card, offers a brief description of the program and tells you how to insert the disk in the disk drive.

The program itself is linear, meaning that the questions are presented one after another in the same order. The instruction card calls this "linear



programming" which it says "reinforces the user and builds on patterns of response." Could that possibly be another way of saying "allows the user to memorize the answers in sequence"? Some questions offer the option of an explanation before you enter your answer, but otherwise, tutorial material is absent.

While the caliber of the questions presented is about average for the programs we reviewed, there is just too much missing. As a supplemental practice program, *Preparing Your Child* might be worth $20, but if you are looking for a competent, inexpensive SAT preparation *package*, choose the Micro Learn package for only $10 more.

CIRCLE 424 ON READER SERVICE CARD

creative computing

SOFTWARE PROFILE

Name: Preparing Your Child For the SAT/Math

Type: SAT preparation

System: Apple

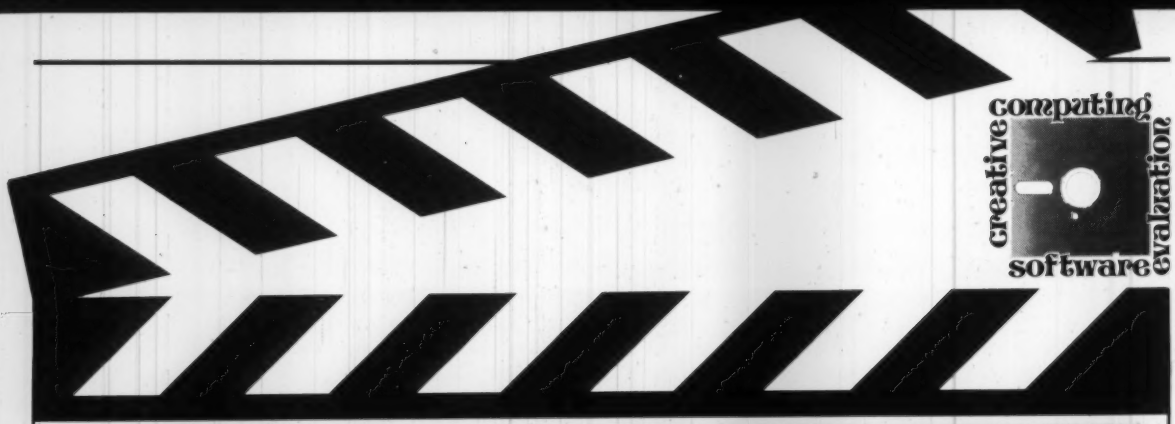
Format: Disk

Documentation: Nonexistent

Summary: Rough and rudimentary; not recommended

Price: $19.98

Manufacturer:
Alpha Software
2335 Moreno Dr.
Los Angeles, CA 90039



DATE
4/20/84

SET/LOCATION
Atari Computers

COMPANY
Interactive Picture Systems

PRODUCTION

Movie Maker

John Anderson

You love graphics, and you love quality. The most exciting computer programs you ever come across are those that take full color advantage of your Atari. These are the ones that push the hardware to new heights of capability, and leave you full of admiration for their programmers. When a program that fits that description makes an appearance, it is an absolute must for your software shelf.

IPS: Atari Celluloid Heroes

In March of last year, we reported very favorably on a program called *Paint*. This package allows the Atari to become a formidable graphics tool, and in all respects exceeds the criteria outlined above. It was put together by a very talented group of people in Washington, D.C. who collectively called themselves SuperBoots. The program was initially marketed by Reston Software, and still is, but it has also joined the main software line from Atari. It is a classic.

SuperBoots Strikes Again

Well the boys no longer call themselves SuperBoots, but they haven't stopped being super. Now calling themselves Interactive Picture Systems, Guy Nouri, Eric Podietz, Mark Scott, and Jimmy Snyder have released a new package through Reston Computer Group called *Movie Maker*.

In the concluding paragraph of our review of *Paint* last year, we mused about the potential of *animated* graphics for the Atari. Creating and saving colorful still graphics on the Atari is very rewarding. But to put real animation capability in the hands of the consumer—that is a wholly new realm. As we stated in that review, *Paint* gave us the hint that if anybody could do it, Messrs. Nouri, Podietz, Scott, and Snyder were probably the ones.

Much to our delight, they were. *Movie Maker* allows the user, with a reasonable investment of time and attention, to get the Atari to do what it does best: animated

creative computing
SOFTWARE PROFILE

Name: Movie Maker Tool Kit

Type: Graphics animation package

System: 48K Atari 800/1200, at least one disk drive

Format: Disk

Language: Machine

Summary: Without peer for the Atari machine.

Price: $60

Manufacturer:
Reston Publishing
11480 Sunset Hills Rd.
Reston, VA 22090
(800) 336-0338

The END *of* DINKETY-DINK.

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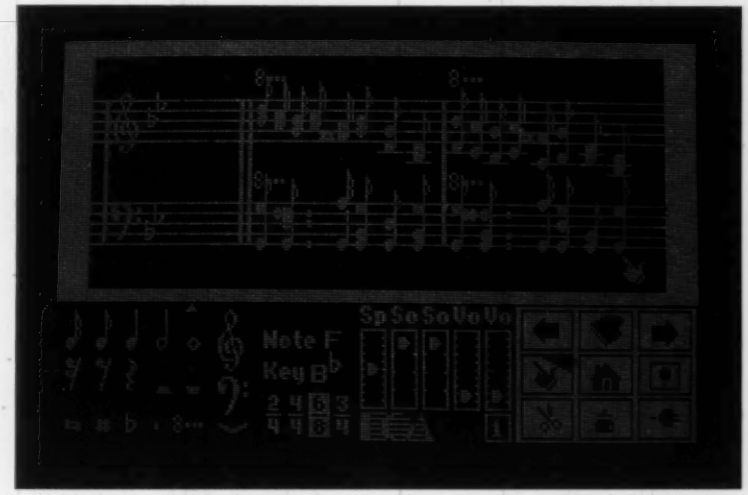

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But what if you're not up to writing your own stuff yet? No problem. There are twelve pieces of music already in here, from rock 'n roll to baroque. They're fun to listen to, and even more fun to change. (Apologies to Mozart.)

The point is, the possibilities are endless. But if you're still skeptical, visit your nearest Electronic Arts dealer and do the one thing guaranteed to send you home with a Music Construction Set in tow.

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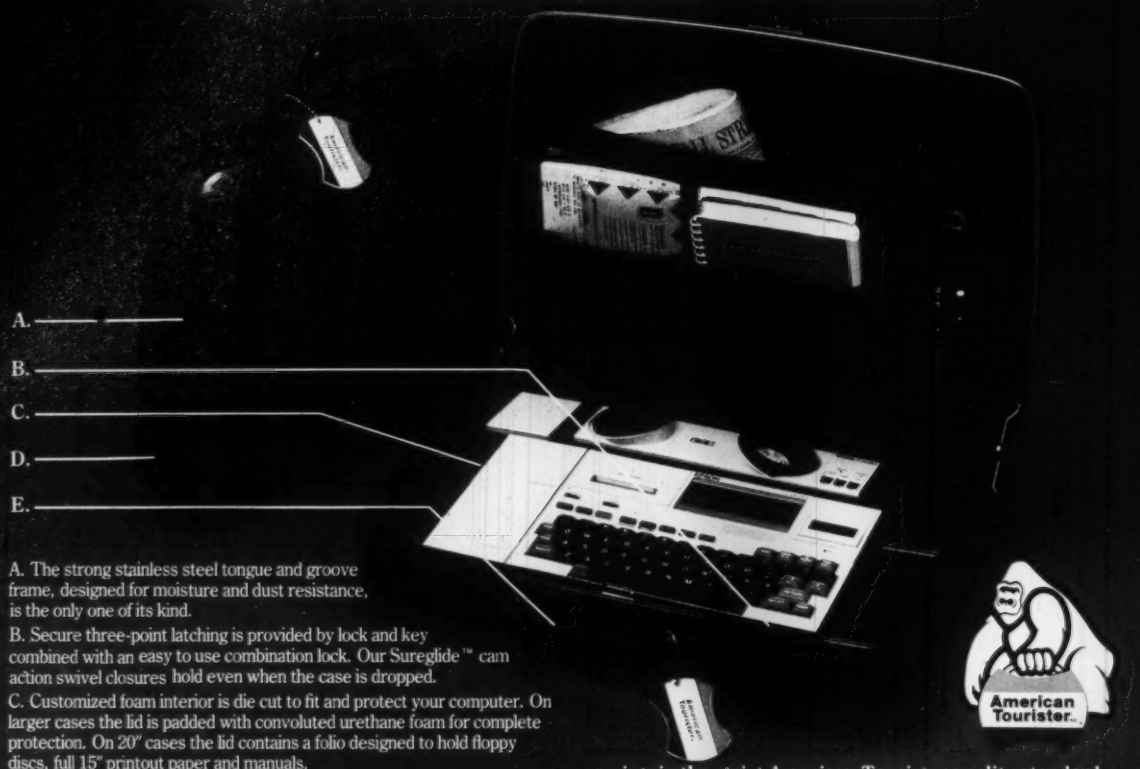

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graphics. On the flip side of the *Movie Maker* disk are some good examples of its potential. A robot assembles itself before your eyes. A chorus line of robots does a great Busby Berkeley routine. Changing geometric shapes spin hypnotically. A certain well-known silent screen comedian offers flowers to his love. A scampering dog slams into a garbage can. Warfare takes place in deep space. A wizard casts his spell—in the form of the letters IPS, for Interactive Picture Systems, appearing magically from the ether. A magician pulls a cat out of a hat to the surprise of our aforementioned canine friend.

The animation demos in the package are credited to Bob Svihovec, who has done quite a superlative job in graphically documenting the potential of *Movie Maker*.

Turn up the volume, and you are in for a real surprise: four-voice sound effects and music. And all of this potential is put into your hands for $60. Absolutely amazing.

It would be wrong for us to minimize the work it will take a new user to become familiar with *Movie Maker*—to master the powerful commands that make high quality animation and sound possible on the Atari computer. You will have to spend some time with the package, working through the provided examples, studying how effects are achieved, and experimenting on your own.

But *Movie Maker* is without peer on the software market for the Atari or any other microcomputer. And compared with the difficulty of attempting animation directly from Basic or machine language, it is an absolute breeze to work with. It has been designed to provide the maximum result for the least possible effort. It is just that the effort must, nonetheless, be made.

Fortunately, *Movie Maker* makes the effort fun, and its excellent accompanying documentation helps get you thinking along the right lines. While we wouldn't recommend it to children under about 12, we are sure there are a few 10-year-olds out there who are just waiting for a package like it. After only a few hours, you can have your own animated shapes moving across you own animated backgrounds, making sounds as they go.

Like *Paint, Movie Maker* is menu-based. From the main menu, the following choices are offered:

- *Compose*, which allows you to create and save shapes and backgrounds for animated sequences.
- *Record*, which allows you to create and save animated sequences.
- *Smooth*, which takes out jumpiness and flicker and smooths the overall look of an animated sequence.
- *Play*, which plays back a saved animated sequence.

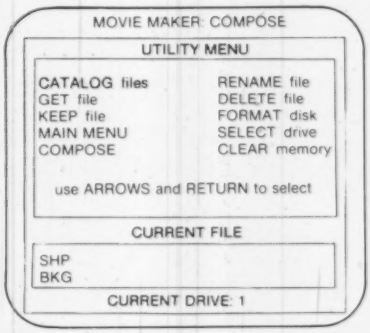
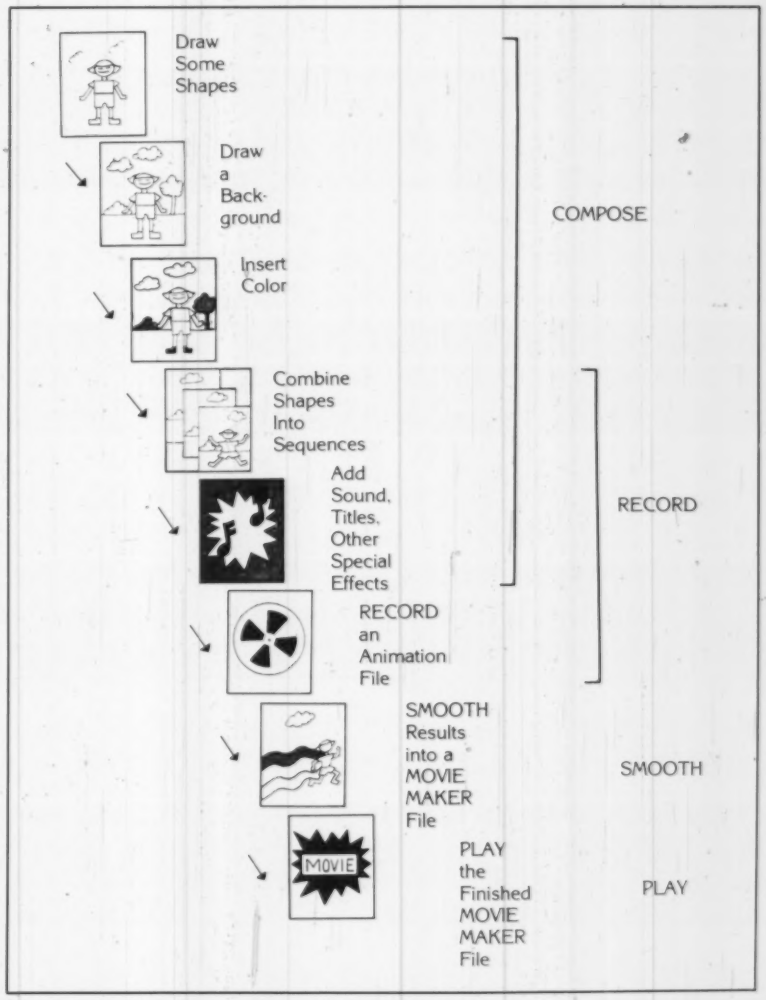


Figure 1.

From any of these main menu selections, you are presented with a submenu. For example, if you choose to Compose, you will be presented with the utility menu shown here as Figure 1. By using the arrow keys, you move the highlighting cursor around the submenu. Press Return when the desired choice is highlighted, and you have made that choice. Depending on which choice you make, you may be presented with another submenu. This nesting of self-prompting menus makes working with *Movie Maker* about as simple as it possibly could be.

The Animated Atari

Let's create a simple animation. First we need some shapes to animate and a background for them to move on. You choose selection 1 from the main menu, Compose. If you have two disk drives, you can save yourself annoying disk swaps by first moving to Select Drive on the utility menu, then choosing drive 2 as the current drive. You may then keep the *Movie Maker* program disk in drive 1 and your own file disk in drive 2. If you have a



The process of making a movie with Movie Maker.

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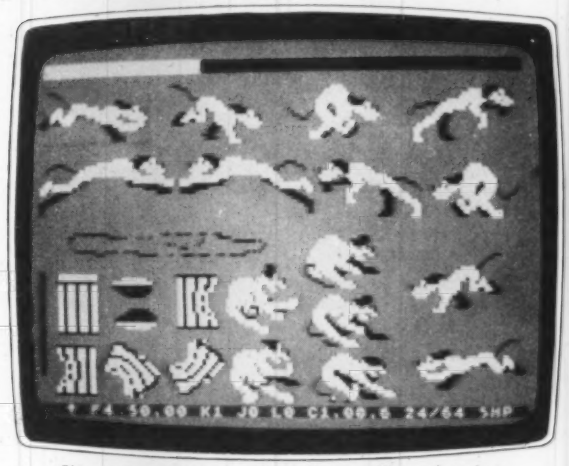
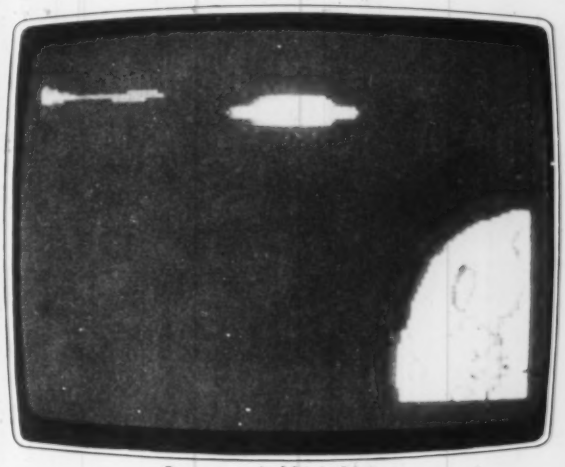


Shapes in sequence make a cartoon-like animation.



Star wars via Movie Maker.

single drive, you will have to make occasional disk swaps to get where you're going. It is a bit of a pain, but you can learn to live with it.

Next you can begin composing shapes. Two full screens are reserved for your drawings: one for shapes to be animated or repeated in the background, and another for the background itself. Using the joystick or arrow keys, you can draw on these pages in four colors. The colors themselves are continuously selectable, and can be modified at any time and from either screen. If you are a lefty, you may even choose to modify the joystick, through software, for lefthanded use.

So start drawing shapes. This drawing always takes place inside a "window," the size of which is continuously adjustable. Why windows instead of freehand drawing? Well the window makes lots of special features possible. It allows you to duplicate shapes or parts of shapes—this makes animation shape changes much easier to draw. It also affords a still drawing feature of great power: to be able to hold a shape in memory and repeat it all over the screen. Not even *Paint* offers this feature.

Say you have drawn a tree. In the duplicate mode, you can move to the background screen and put trees in all over the place. Start in the "back," as new trees will appear to be put down "in front" of older ones. And *voilà*—a forest in seconds.

To make a plain old shape into an animated shape, you simply outline it with a window, then press the 0 key. That's it. Now you can duplicate and modify the original shape, and make it the second incarnation of the animated shape by outlining it as you did the first shape. With five or six shapes to a sequence, you can have a jogger or a pulsating spaceship moving across the screen with a surprisingly smooth effect.

As in *Paint*, you can zoom from the default graphics mode 7 into graphics 5 or graphics 3 to do detail work. These zoom motions can even be incorporated into a finished animation. Bear in mind, of course, that at maximum zoom, graphics mode 3 is about as lo-res as an Atari can get. Carefully designed shapes, however, will look acceptable even when viewed in graphics mode 3.

Other powerful drawing commands allow enclosed areas to be filled with color, and shapes to be flipped symmetrically (mirrored) across the X or Y axis.

Once you have multiple animation shapes and a background, you can really get to work animating them. For this you choose the menu entry Record. You have 300 possible frames to play with in a single sequence, and though that may not sound like much, you can make an awful lot happen in 300 frames. (You can also chain sequences together for longer pieces, punctuated by pauses to spin the disk drive.)

You can play with a sequence to your heart's content, fine tuning it until it looks just the way you want it to.

As in the Compose mode, a help line appears at the bottom of the screen during Record. It is even more important to monitor this line during Record than it is during Compose, as all the specific characteristics of motion are defined by it (see Figure 2).

They include the following:

•F: Frame Rate. Equivalent to the click of the shutter on an animation camera shooting single frames. Adjustable from 1 to 9, slow to fast. In concert with other commands, animation may then take place in something approaching "real time." Or, by choosing an F rate of 0, you may take charge of each single frame, and shoot only when the spacebar is pressed. This gives you total control over screen movement.

•K: Kwickness. Determines the number of frames for which each shape is held on the screen before the next shape in the sequence is put up on the screen. Using this command, you can make one animated shape move faster than another by recording them at different K rates.

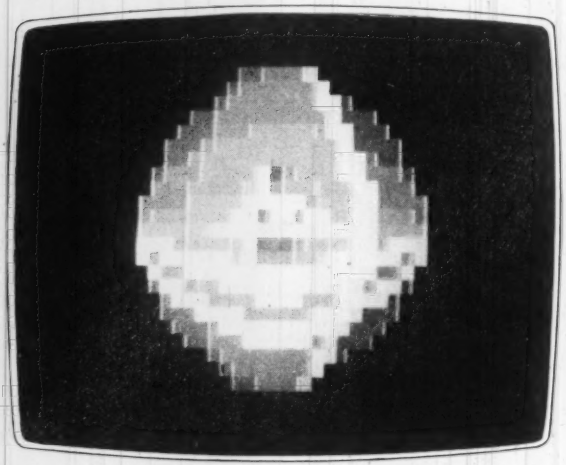
•J: Jump. Determines how far an animated shape will move for each movement of the joystick or press of 0 arrow key during actual recording. A J rate of 0 sets an accelerating jump rate.

• L: Loop. Determines the number of times the current sequence cycles during recording. An L rate of 0 keeps cycling continuously.

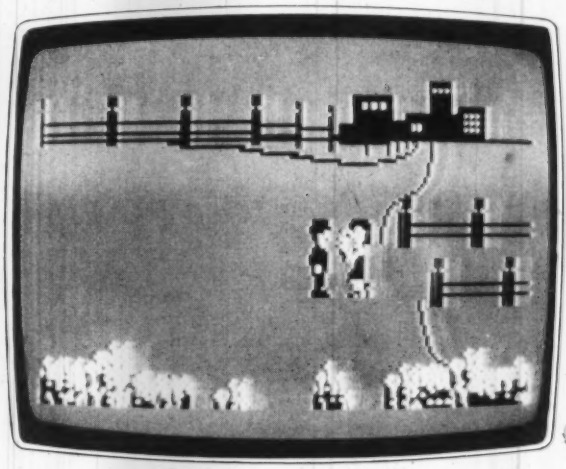
Tuning In

If you don't already have *Movie Maker*, you may have begun to lose the thread of our discussion. Hang in there: these functions will become clear very quickly when you view them in action—when you have an opportunity to experiment with them.

In fact, the tuning and adjusting of your own animated sequences—"editing," as the documentation calls it—is probably where you will spend the most time with *Movie Maker*. You can play with a sequence to your heart's content, fine tuning it until it looks just the way you want it to.



A spinning disc changes size and shape in a provided demo.



Scene from a silent comedy.

This process not only helps your work look better, but helps you learn what really makes *Movie Maker* tick. Several commands allow you to pinpoint areas within a sequence:

•P: Playback. Cycles through the playback of a sequence from an indicated point.

•G: Goto Frame. Puts you into playback and positions the recorder at the frame number specified.

•R: Rewind. Like the P command, except in reverse. Sets you into reverse playback at an indicated frame rate, cycling continuously.

•/ (Slash): Frame Marker. Allows you to mark a frame, then stop there automatically during recording or playback.

In addition, holding shift and pressing the left or right arrow key allows you to move back or ahead a single frame at a time. This can be very useful in editing several animated shapes. This function works during record or playback.

The size of outlined shapes can be altered using the Scale file, which is accessed separately. Shapes can be expanded horizontally or vertically.

Moving shapes, or "actors," as they are called in the documentation, can be repositioned or even traded on the fly, and colors can be changed from within the record mode. This allows for multiple sequences within a single animated file and neat color effects, such as fades to black. If only you could do dissolves!

Then there are sounds. You can incorporate a variety of sounds into your animation files by recording one to four "soundtracks." You get the sounds from a special file on the master disk and add them to an otherwise finished animation file. The sound library consists of lots of beeps, boops, and crashes, but unfortunately you may not add your own sounds to this complement. There are, however, quite enough sounds to punctuate the most intricate animation.

Figure 2.

Reading the RECORD Help Line

The Help Line in RECORD has the following fields

001	F4	A1	S1.01	K1	J0	L0	N-.1	C1

1. An arrow at the left. The direction of the arrow at the left tells which page is on the screen. An arrow pointing up indicates the Shape Page; down indicates the Background Page.

2. A three-digit number between 001 and 300. This is the Frame Counter. It indicates the number of the current frame.

3. An F followed by a number between 0 and 9. The F-number indicates the Frame Rate, or the speed at which frames are changed.

4. An A followed usually by a number between 1 and 6. This indicates the Actor currently being recorded. A zero indicates that no Actor has been recorded.

5. An S (for Sequence) followed by a decimal number. The number to the left of the decimal point indicates the current Sequence being recorded (0 to 9). Zero (0) means no Sequence has been selected for recording. The number to the right of the decimal point indicates the current frame (00 to 16) within the Sequence. Each Sequence can have up to 16 different frames. The double zero (00) indicates that no Shapes have been selected for the current Sequence.

6. A K followed by a number between 0 and 9. This indicates the Kwickness setting.

7. A J followed by a number between 0 and 9. This indicates the Jump Rate setting.

8. An L followed by a number between 0 and 9. This is the Loop setting. It indicates the number of times the current Sequence will cycle during recording.

9. An N-number (in the next to last field). The number to the left of the decimal point indicates the Noise (1-8) to be recorded. N0 means that Noise is turned off. The number to the right of the decimal point indicates the current Voice (1-4). You may record only one Voice at a time.

10. A C-number (in the last field). It shows which color is current (0, 1, 2, or 3), but not the hue and luminance settings. You may record only one color at a time.

The RECORD Help Line can be turned off by typing H and turned back on by typing H again.

You can even add titles and text to your work using a special Text file.

Smoothing Things Over

The Smooth function on the main menu works completely automatically. When you have a completed work, Smooth will remove any flicker from your animation file and produce a finished *Movie Maker* file. This file can then be played back in one of several ways.

You can play files directly from the *Movie Maker* master, using the selection Play. Alternatively, you can boot the flip side of *Movie Maker*, then insert your own set of animation files. They will play one after another in the order that they were recorded on the disk. Or, you can make your own autorun disk, using a utility program on the flip side of *Movie Maker*. This is the best way to play back multiple files.

The Limitations

Movie Maker lets you get more out of your Atari than any graphics program we have seen. But it does have its limitations:

•Four colors. You can get only four colors on the screen at a time.

•Nine sequences. You can keep only nine sets of multiple shapes at one time. An unlimited number of sequences can be stored in an animation file, however, and as these can be changed on the fly, you can get around this restriction.

•Sixteen frames in a sequence. Only 16 "incarnations" of an animated shape can be kept in a single sequence. Under normal conditions, this should be more than enough. And as stated above, you can switch to a second sequence and gain an additional 16 shape changes.

• Sixty-four outlines on the shape page. For nearly all intents and purposes, this is more than enough for even the most sophisticated animation.

•One-quarter screen for a shape outline. The largest single animated shape possible is a quarter of the total screen. You might make a larger shape by using two shapes together. Bear in mind that the larger the shape, the slower it can move.

It would have been absolutely magnificent if the program allowed for backgrounds to be larger than a single screen in size.

•Six actors at a time. You can have only six moving shapes on the screen at one time. This allows for quite a bit of action. Still, with a little ingenuity, you might actually be able to group two shapes to move as a single actor, freeing up a new actor to move independently.

•Three hundred frames to an animation. You can make an animation longer by slowing the frame rate of its display. Or you can loop the playback, or chain to another animation file. There will be a pause while the new file is being read from the disk. Use your imagination to make the pauses occur at natural breaks in your storyline.

Because *Movie Maker* is such a superlative package, we wince at criticizing it. It is easy to say it should do this, that, or the other thing, but tough to do so while underscoring our respect of the marvel of programming it represents. That said, here is the wish list.

Graphics 7 is fine, but if the program could also operate in graphics 7+, its resolution would be nearly twice as good. Even if such a potential limited overall screen size, it would have made for much more dramatic resolution. As it stands, it is not the very best the Atari could do.

It would have been absolutely magnificent if the program allowed for backgrounds to be larger than a single screen in size. Combined with the ability for fine scrolling, this would allow for dramatic "tracking shots," wherein animated shapes could gallop, amble, or shimmy at center screen, while the background moved smoothly behind them. Again, such a potential would push the Atari to the very limits of its capability—if you have seen scrolling games like *Zeppelin* or *Quest for Tires*, you'll know what we mean.

With its 128-color capability, the Atari in four colors is a letdown. The four-color restriction of this program puts it in the same color category as Atari Basic, which is a bit disappointing. It is especially drab next to Atari graphics applications that present an incredible rainbow of hues. In all fairness, however, getting around this in a program with the capabilities of *Movie Maker* would probably be utterly impossible.

It is too bad that the sound library is canned, and does not allow you to define your own sounds, just as you can do with shapes. Again, this would have presented a serious programming challenge. A whole new sound editor module would be necessary. But it would have been terrific if it was there.

In the wake of these comments, let us reiterate: *Movie Maker* is a masterpiece; it puts the fantastic animation capabilities of the Atari in the hands of us mere mortals. These fellas are to be watched closely. They understand not only the power of the Atari, but the creative desires of Atari owners. And most important, they comprehend how to package that power in a way that makes it easy and fun to use.

First with *Paint* and now with *Movie Maker*, the authors have shown that it shouldn't *have* to take the mind of a Bill Budge or multi-thousands of dollars to get a taste of sophisticated animated graphics creation. A most worthy and gratifying accomplishment. For that, Interactive Picture Systems, we salute you. Please keep it up. CC

CIRCLE 425 ON READER SERVICE CARD

Frankly, I think our new personal computer is a bit too personal.

creative computing software evaluation

Something For Everyone

Steve Arrants

For many serious game players, the Apple is *the* machine. Whether it is a text adventure, arcade adaptation, or brain teaser, it is sure to be available for the Apple. Developers are continually pushing the Apple to the limit. Some games are every bit as sophisticated as business software.

Reviewed below are seven new games for the Apple. One lets you race the Atlantic; with another you can corner the world oil market. Three arcade games are reviewed and another game marks the end of an adventure saga. All are fun, exciting, and worth the time and money spent.

Bermuda Race

Most sports simulations are boring, repetitious exercises involving little skill or excitement. While they might teach you how to use a joystick properly, few actually involve the knowledge and skills necessary to excel at a sport. The graphics may be excellent, the crowd noises exciting, but how much do you actually learn about the sport?

Bermuda Race from Howard W. Sams is the exception. You and your computerized crew pilot an 80-foot, specially designed yacht from Newport, RI to Bermuda, battling rough seas, high winds, and quicker opponents.

To help you along, the authors—experienced sailors and Apple programmers—include extensive disk tutorials on sailing and navigation. *Bermuda Race* doesn't try to make you an expert in an hour, but it does give the feel of luff, leech, and tacking to starboard. The tutorials are so thorough, that even a novice like me can understand the difference between fore and aft, and why starboard is starboard.

Bermuda Race is a one- or two-player game. A single player races against the Nirvana, winner of the 1982 race. If the two-player version is selected, both start at Narragansett Bay and finish at Hamilton Harbour, Bermuda. The winner is the first to cross the finish line. Simple? Not at all. Winning *Bermuda Race* is much more than getting from point A to point B. You must set the proper amount of sail, tack against the shifting wind, struggle against high seas, and navigate blind when the satellite system breaks down.

The simulation is excellent. *Bermuda Race* takes all possible sailing factors into account. The graphics are fine—not too cartoonish or blocky. The first screen is a high-resolution map of Narragansett Bay, complete with Martha's Vineyard, Block Island, and the smaller islands in the area. As you sail onto the high seas, the scene changes into a navigation chart of the Atlantic Ocean.

Maybe this was the Australians' secret weapon in The America's Cup race.

When you near Bermuda, the scene changes back to the smaller scale, showing the position of the harbor and dangerous reefs. You can alternate between these graphics and text screens which display up-to-the-minute information on heading, wind speed and direction, wave height, and amount of sail. One important piece of equipment is the centerboard. It seems that any time the wind changes you must raise it or lower it to compensate—too high or too low and you're in trouble.

Bermuda Race is a challenge. There is really more than one opponent. You not only battle against another ship, you fight the sailing conditions. Just as you have set course, trimmed the sails, and

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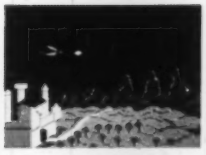
SOFTWARE PROFILE

Name: Bermuda Race
Type: Game
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Realistic and challenging.
Price: $29.95
Manufacturer:
Howard W. Sams
43 W. 62nd St.
Indianapolis, IN 46268
(317) 964-1200

DRAGONRIDERS OF PERN.
FLY THE UNFRIENDLY SKIES.



Shooting down the menacing and constantly multiplying Threads isn't easy, but it's only one of the challenges in this official computer game version of Anne McCaffrey's famous book series.

Your strategy will be put to the test as you try to negotiate alliances with Pern's Lord Holders in an attempt to form the most powerful Weyr on the planet. Should you take a firm stance or compromise? Will asking a Craftmaster for assistance increase your chances for success? Maybe you should invite prospective allies to a Wedding or even a Dragon Hatching. Remember to check the Lord Holders personality traits first. It may be critical to your success.

Numerous screens combine to create truly unique and challenging game play. There's even a practice screen to sharpen your Thread Fighting skills.

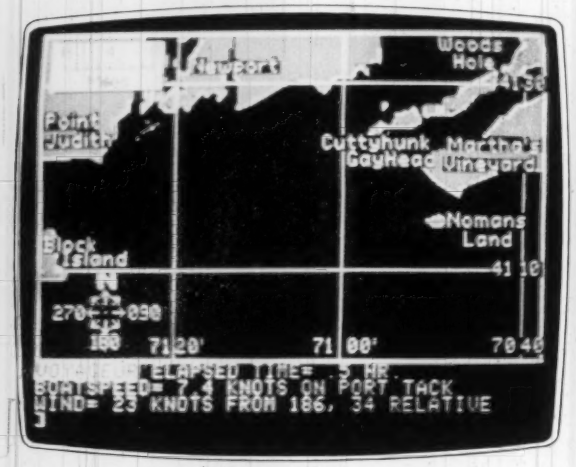
If you liked the books, you'll love the game. After all, how often do you get the chance to actually fly a dragon?

One to four players, joystick and keyboard controlled.

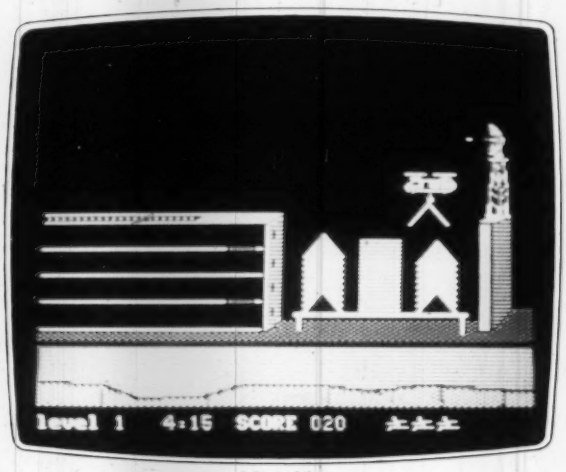
EPYX COMPUTER SOFTWARE

Strategy Games for the Action-Game Player

CIRCLE 144 ON READER SERVICE CARD



Bermuda Race



Minit Man

adjusted the centerboard, a storm might appear. Down with the sails, up with the centerboard, and pray for a miracle. Prepare for the unexpected; the worst that can happen to a boat on the open seas often does in *Bermuda Race.* This game is about as much fun as you can have without the expense of buying and fitting a sailboat. Maybe this was the Australians' secret weapon in The America's Cup race.

Minit Man

I hated *Choplifter.* Moving that helicopter was so much trouble that I ended up crashing into the tanks instead of bombing them. Kamikaze games don't interest me. When I saw the helicopter on the *Minit Man* package, I thought I was in for another quick disappointment. Well, I'm still playing *Minit Man* and still trying to better my score.

The plan is simple: pick up girders and trusses with the helicopter and complete a bridge. When the bridge is finally done, a train carrying a missile comes across and enters the command center. You then fly the helicopter to the roof, enter the command center, and launch a missile. When three missiles have been launched, the world is safe. That is the plan. The execution is more involved.

The girders and trusses are two screens to the right of the bridge. The enemy is a pack of crazed robots who smash into the bridge and fire on your helicopter. These thugs also enter the command center and try to sabotage the computer. Further complications take the form of microwave transmitters guarding the bridge and building materials. A zap from one of them and you drop whatever you are carrying. *Minit Man* also times you. At higher levels, a minute is deducted from your starting time, so the game is not so simple after all.

You are equipped with a magnetic hoist which must be positioned precisely over a bridge piece. If it is the slightest bit out of alignment, the girder or truss falls off, and you go back to the supply station for another. A gun in the nose of the helicopter is your only defense against the robots. If they enter the command center, you can shoot at them through slots in the walls. One shot won't stop them, however. Each hit causes them to mutate into another shape. After the third hit, the robot vaporizes, leaving a land mine in its place. If several of them have infiltrated the command center, just hit a few of them twice. When they crawl over the mine left by their comrades, they will be destroyed.

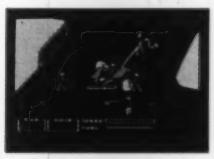
Minit Man is slow in some spots. There is a wait as you exit one screen and enter another. If you are as uncoordinated as I am, you may run out of building materials before you complete the bridge. But with all that goes on in *Minit Man,* these are minor complaints. The graphics are excellent and the playing exciting.

creative computing
SOFTWARE PROFILE

Name: Minit Man
Type: Arcade
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Great play and graphics at a nice price.
Price: $19.95
Manufacturer:
Penguin Software
830 Fourth Ave.
Geneva, IL 66134
(312) 232-1984

Okay, let's make it eleven out of twenty.

PITSTOP.™
WHERE WINNING IS THE PITS!



You'll never make Grand Prix champion just driving in circles.

You've got to stop sometime. The question is when. Right now you're in the lead. But the faster you go, the more gas you consume. And the quicker your tires wear down.

If you do pull into the pits, though, you lose precious seconds. So it's up to you to make sure the pit crew is quick with those tires. And careful with that gas. Otherwise, poof! you're out of the race.

See your retailer for available computer formats.

So what'll it be, Mario? Think your tires will hold up for another lap? Or should you play it safe and go get some new ones?

Think it over. Because Pitstop™ is the one and only road race game where winning is more than just driving. It's the pits.

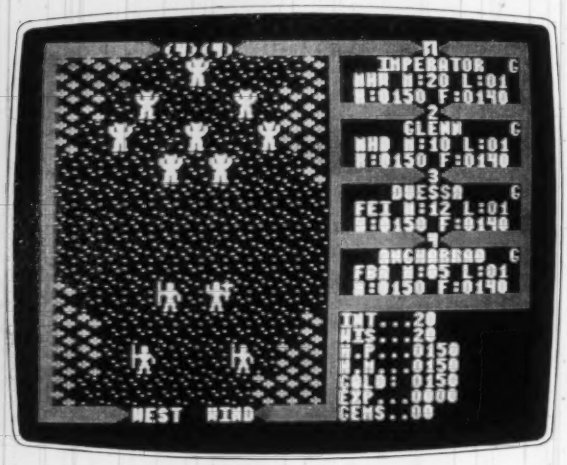
Goggles not included.

One or two players; 6 racecourses, joystick control.

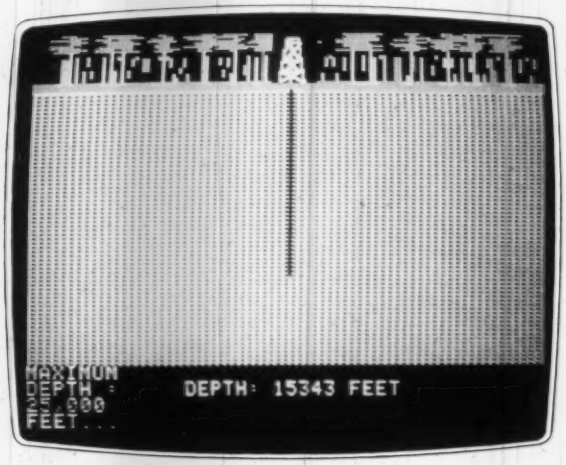
EPYX
COMPUTER SOFTWARE

STRATEGY GAMES FOR THE ACTION-GAME PLAYER.

CIRCLE 145 ON READER SERVICE CARD



Ultima III



Oil Barons

Ultima III

Lord British, author of the popular Ultima games from Origin Systems has created another winner in the series. *Exodus: Ultima III* is his best work so far. For those unfamiliar with the series, each Ultima game is an interactive text and graphics adventure. Weak points in the earlier games included sketchy plotting and characterizations. The improvements in these areas make *Exodus: Ultima III* superb entertainment.

The plot appears sketchy in the documentation only because it unfolds as the game progresses. Players of "quest" games know, though, that it involves a search, battles, rewards, and mysteries. The mystery here is: Who (or what) is Exodus? Clues are gathered from every possible area—dungeon, village, mountaintop, and beyond.

The map is smaller than in the earlier games, and the time doors have disappeared. Moon gates, transport portals that activate only when the two moons of the planet are at the appropriate phases, lead you into different lands. Learning how to use them is a major accomplishment. In *Ultima II* it is easy to waste time on useless planets. There is no such place in *Exodus: Ultima III;* each location has a meaning and purpose that will help to complete the game.

Exodus: Ultima III has more characters, too. Lord British has included a program to create up to 20 characters on disk, though only four can travel in a game at any one time. The group is represented by one character when moving. When a conflict develops, their individual nuances appear. Each can then be controlled separately and can move, fight, or cast spells without interaction with the others. Characters can exchange items and cast spells with and at each other at almost any time.

As in any quest, the characters in Exodus: Ultima III start out with little knowledge, experience, or magic.

As in any quest, the characters in *Exodus: Ultima III* start out with little knowledge, experience, or magic. Everything must be found, earned, or bought. You must decide what you might need later in the game because there is only so much you can carry. Each character must be designed to complement the others to make a well-rounded and successful group.

If you have the Mockingboard attached to your Apple, a musical score accompanies each move and obstacle. Even without this peripheral the game is truly exciting.

I don't want to give away too much of *Exodus: Ultima III.* Play it for yourself and experience it. This is Lord British's best work so far. It is also supposed to be the last in the Ultima series. That's too bad. The end of *Exodus: Ultima III* is almost like the end of Tolkien's Ring trilogy. You are satisfied with the outcome, but a bit sad that there will be no more to come.

creative computing
SOFTWARE PROFILE

Name: Exodus: Ultima III
Type: Adventure
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Excellent! A treasure!
Price: $54.95
Manufacturer:
Origin Systems
1545 Osgood St.
Suite #7
North Andover, MA 01845
(617) 618-0609

Oil Barons

Whew! Talk about long involving games! *Oil Barons* combines classic board gaming with a computer to make it one of the most realistic games available. The eight-piece board locks together into a large, confusing playing surface. It isn't a recognizable map of the world. There are about 200 tiny squares, each filled with a photo of a different map feature. At first, this is perplexing, but after staring at it a while, the eye begins to recognize some order. Don't think of it as a map of the

creative computing
SOFTWARE PROFILE

Name: Oil Barons
Type: Computer & board game
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Exciting, involving, and long.
Price: $99.95
Manufacturer:
Epyx Computer Software
1043 Kiel Ct.
Sunnyvale, CA 94086
(408) 745-0700

OIL BARONS.
IF YOU'RE SMART, YOU'LL GET FILTHY RICH.

Are you a gambler, eager for new challenges... ready to pit your skill and luck against others in an attempt to corner the world oil market? If so, Oil Barons is your game.

Starting with 4 parcels of land and over $1 million, you search for that ever-elusive gusher. The computer does all the work, including banking and scorekeeping, freeing you to plan your strategy and make decisions that will ultimately determine your success.

Obstacles like government regulations, well fires, and hurricanes complicate matters, but the fun of increased land holding, striking it rich, and even unloading worthless parcels on the uninitiated, more than make up for the setbacks.

One to eight players, 4 color gameboard and playing pieces included, keyboard controlled.

EPYX
COMPUTER SOFTWARE

Strategy Games for the Action-Game Player

CIRCLE 143 ON READER SERVICE CARD

Earth—after all, who would build a major city in the ocean?

There are nine different game scenarios on the disk. The two easiest are Reality and Classic. Up to eight may play at one time, making this a good choice for a group.

In all scenarios, play is controlled and monitored by the computer. On each turn, it keeps track of the land sales, auctions, surveying, drilling, payments, and legal notices. It also interrupts for vital news developments and special announcements. There is always the possibility that you will lose a claim because the Secretary of the Interior declares your land a wildlife area, or lose a well to an earthquake.

At the start, you are dealt four parcels of land and given one million dollars with which to operate your company. Later on, the computer auctions more available land. In addition to the human players, the computer controls five dummy corporations to compete for land and resources.

At your turn, you survey your land. The computer tells you the cost of drilling and to what depth you may drill. When you drill, a graphics animation of an oil derrick appears showing the work above and below ground. The drill may encounter rough going and you must either authorize continued work at higher costs or abandon the well. Don't expect many gushers. As in the real world, there are few. Careful research rather than luck brings in a well.

When playing the Reality scenario, the computer randomly generates oil locations. It is just as possible to find oil in a desert as on Main Street. In the Classic mode, however, the location of oil is related to the terrain. The other scenarios let players set the play parameters within various ranges. Gambling is an exciting scenario in which the computer mixes up every parameter and you must learn the rules of the game as you play it. Strange twists, such as a quick change in the environment or a large drop in drilling costs, can occur. You don't know what determines victory until the game is over.

Oil Barons is an exciting simulation.

Oil Barons includes colored stones for property markers, green markers to show active wells and blue markers for dry wells. The documentation is excellent, and you should take the time to read it. Playing without understanding the rules can cost you your company. The game can't be saved if you want to finish it at a later date, so plan on a long evening. *Oil Barons* is an exciting and realistic simulation of the oil world. Like the price of oil these days, however, the price of *Oil Barons* is high. It costs almost as much as a barrel of oil.

Caverns of Callisto

The story is rather simple. You are on the moon Callisto when mutants invade your spaceship and steal important machinery. Before you can leave, you must descend into the interior of the moon and recover the parts. I wish the play were that simple.

You are armed with a laser-plasma rifle that can kill a mutant with one shot. Unfortunately, you usually end up hitting the far side of a cavern wall. The joystick doesn't just control your aim, it controls the laser burst. Even after you let off a shot, moving the joystick a fraction of an inch can push the bullet off its course.

DRIVE CAREFULLY.

When you add disk drives to your system, pick them carefully. Get all the features you need, but don't pay for options you'll never use. Choose from a selection of Microsci floppy disk drives that includes everything from low-cost add-ons to large capacity, high-speed subsystems.

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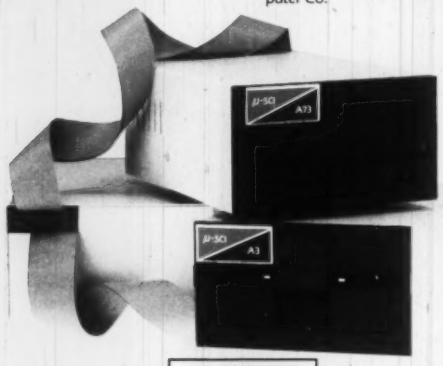

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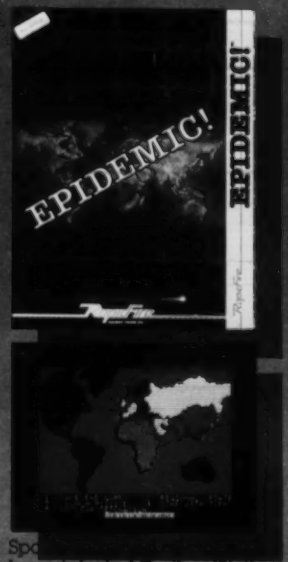

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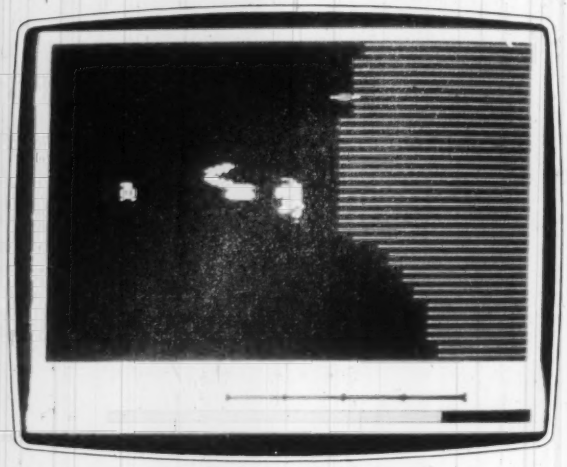
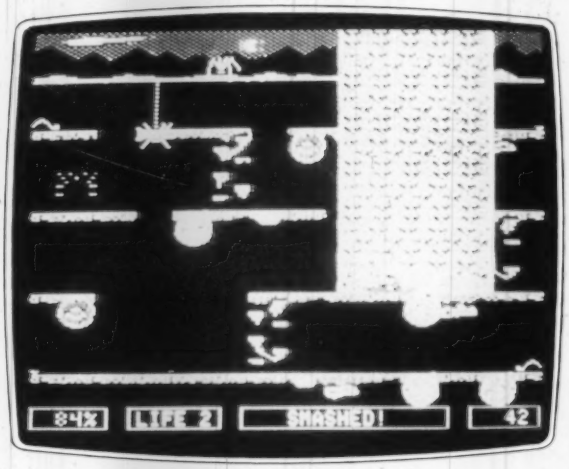


Caverns of Callisto



Dino Eggs

Caverns of Callisto includes a map of the caverns but game play is so frantic that you need to keep one eye on the map and the other on the screen. The mutants pop up so quickly that you don't have many chances to peek at the map. Don't ignore the map, however. It is vital to winning this tough game.

The mutants are everywhere and they never stop coming at you. If you fly to the extreme right or left of the screen, some mutants disappear off the other side. When you come back, they won't be there. A tricky way of ridding yourself of work or the work of a lazy programmer?

Caverns of Callisto is the toughest game I have played since *Joust.* You not only have to kill mutants, you must find your stolen rocket ship parts and get them back to your ship. What is bad about *Caverns of Callisto* is that there are so many mutants to kill you might forget about retrieving the stolen parts. Sure, you earn bonus points for finding keys, the ion drive, and other parts, but will you ever get out of the caverns to use them?

If you enjoy a lightning-fast game that can get your heart pounding, *Caverns of Callisto* will make you happy.

creative computing
SOFTWARE PROFILE
Name: Caverns of Callisto
Type: Arcade
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Fast paced and tough.
Price: $34.95
Manufacturer:
Origin Systems
Box 58009
Houston, TX 77258
(713) 333-2539

Dino Eggs

It seemed like such a simple trip. Hop into your home time machine, zip back to the Mesozoic, check out the life forms, and be back in time for M*A*S*H re-runs. Well, science in the twenty-first century is advanced enough to build a time machine, but it still hasn't eliminated measles. You brought the disease back in time with you, and the dinosaurs are doomed. They have just one chance. If you can gather enough eggs and return with them to the future, they can be saved.

Dino Eggs is not as simple as that description makes it sound. And it is more difficult than you can imagine. While you are running across a mountain wall gathering eggs, you must start a fire, dodge radioactive spiders and worms, run back to your time portal, avoid Dino Mom . . . Sound complicated? *Dino Eggs* is the first program that requires multi-tasking from the user rather than the computer.

The eggs are out in the open and hidden under rocks. Pressing button 1 of the joystick picks them up. You can carry only three at a time, so get back to the time portal and transport them to the future. If you eat a strength flower, you can pick up six eggs at once. Pick up all the eggs before they hatch and you move to the next level.

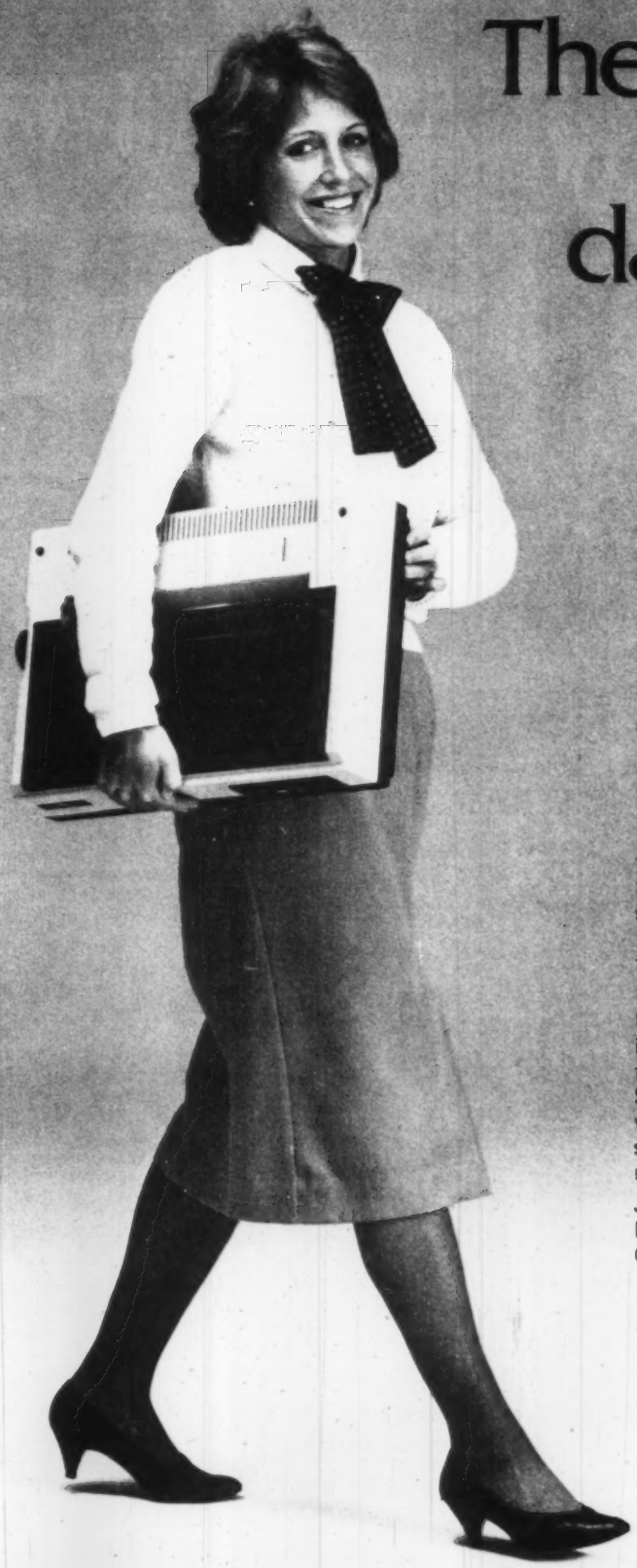
This becomes very difficult when you encounter the dinos' natural enemies. One bite from a snake, spider, or centipede and you must rush back to the time portal for decontamination. Miss it by a second, and you devolve into a spider. Oh yes, don't forget to start a fire. If you are too slow to do this, Dino Mom steps in. She is not a very understanding lady, and when she puts her foot down, you can kiss the past goodbye.

Dino Eggs has nine skill levels. On each level, the challenge is deadlier, the pace quicker, and the risks greater. *Dino Eggs* is even better than Micro Fun's popular *Miner 2049'er.* The graphics and sounds are much cleaner and more life-like, and the game plays much faster. You won't have much time to plan out a strategy while playing *Dino Eggs,* but that shouldn't bother you. You will be too busy trying to stay alive and out of Dino Mom's way.

creative computing
SOFTWARE PROFILE
Name: Dino Eggs
Type: Arcade
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Lots of fun; excellent graphics.
Price: $40
Manufacturer:
Micro Lab
2699 Skokie Valley Rd.
Highland Park, IL 60035
(312) 433-7550

Drol

Fresh from the success of *Loderunner,* Broderbund strikes gold with *Drol.* The story is a bit far-fetched, but *Drol* is a game that requires the suspension of disbelief. It seems that a little girl and her brother have been lured by a witch doc-



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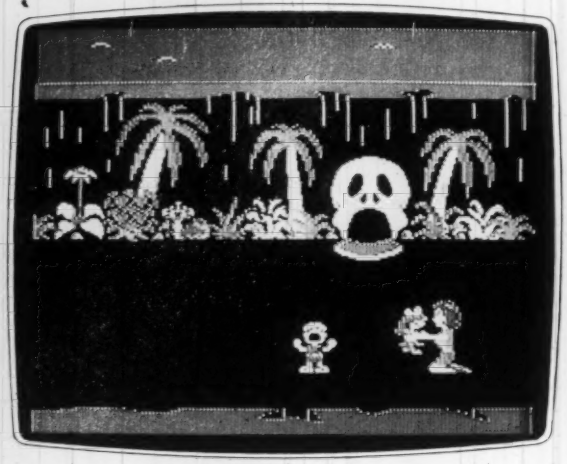
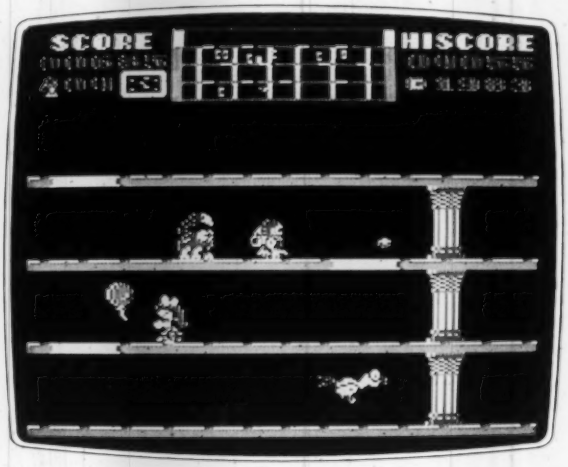


Drol



Drol

tor into the multi-leveled ruins of a lost civilization.

Under his spell, they wander aimlessly through the underground corridors, oblivious to the perils around them. It is your job to rescue them, their pets, and their mother. As the hero, you are equipped with an antigravity suit that lets you float throughout the corridors and slip between levels. An unlimited supply of reality pellets can disintegrate the monsters and phantoms that threaten you.

Each game consists of three levels. On level one, you must rescue the little girl and her pet lizard. On level two there is a little boy and his pet crocodile. If you reach level three, rescue Mom and watch a victory cartoon.

Getting through all three levels requires quick reflexes and fast thinking. If you do succeed, you find yourself back at a much tougher level one.

On each level the monsters and phantoms become more hideous. Scorpions, flying turkeys, the witch doctor, snakes, and even green vacuum cleaners all stand in your way. One shot from your reality gun will destroy all except the turkeys and vacuum cleaners. Flying turkeys must be shot at repeatedly and the green vacuum cleaners are indestructible.

Because the play area is larger than the screen, you scroll right or left as you move. A full-screen radar scope at the top of the screen helps you keep track of the monsters' movements. You start out with five lives, and earn an additional one for each round completed.

Drol is not another *Loderunner*, but it wasn't meant to be. You can't create your own game screens or play practice levels, but *Drol* is a lot of fun. The graphics are excellent and the idea behind the game is just humorous enough to make it succeed. EG

creative computing

SOFTWARE PROFILE

Name: Drol
Type: Arcade
System: Apple II+, IIe
Format: Disk
Language: Machine language
Summary: Great graphics and a wry sense of humor.
Price: $34.95
Manufacturer:
Broderbund Software
17 Paul Dr.
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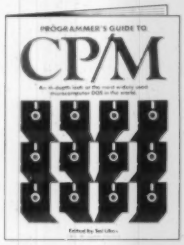

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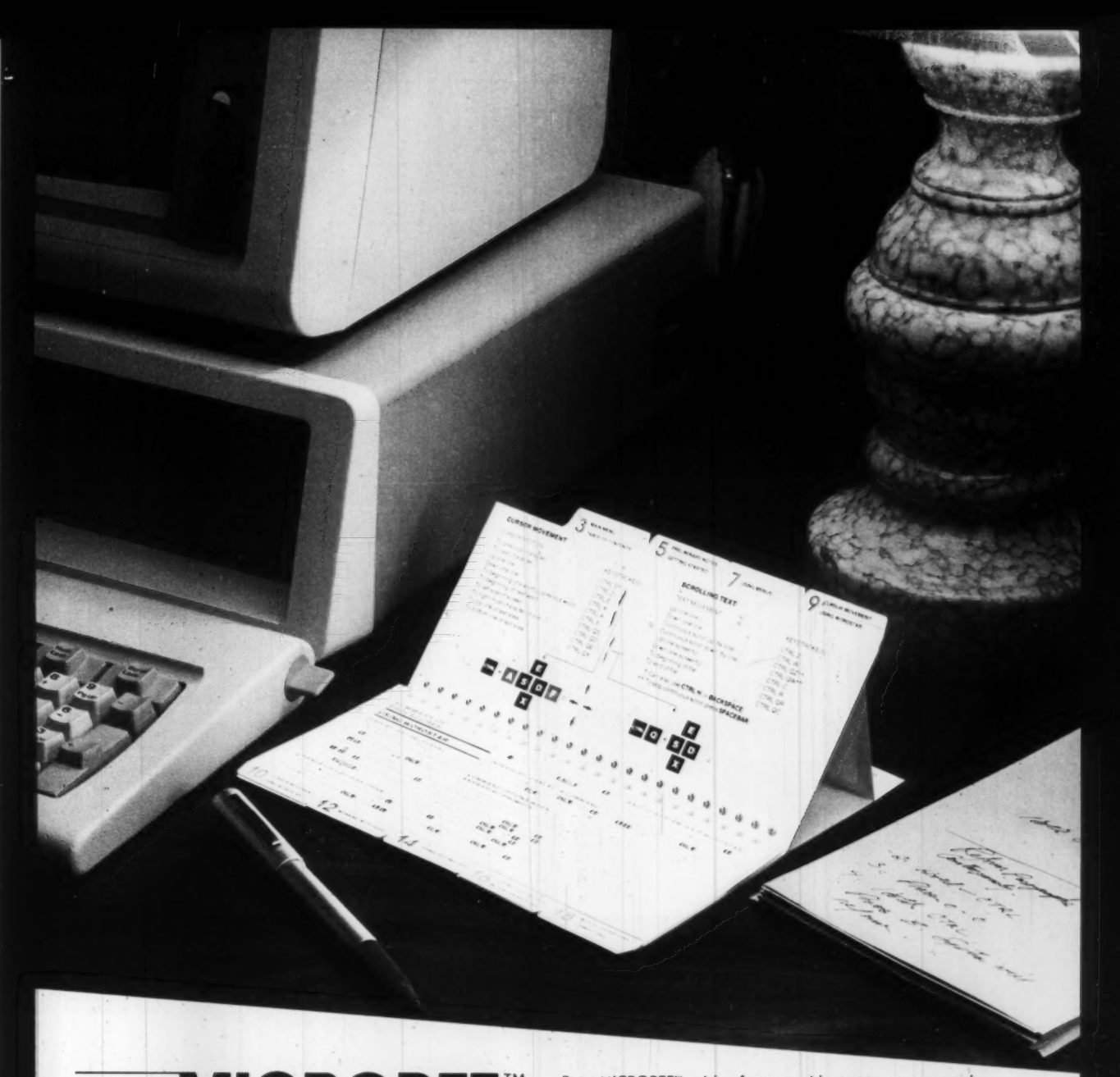

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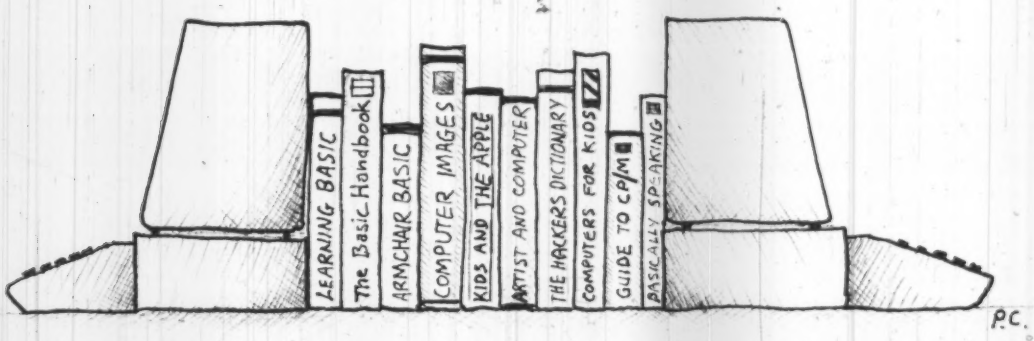


Your Computer Bookshelf

David H. Ahl

Some months ago after I wrote several rather critical book reviews, some readers wrote in asking for a list of my pick of the best computer books available. Well, this isn't exactly an exhaustive list, but it is a selected group, the quality of which I feel rises above the scores of titles that have come out in the past year.

Basic Programming

There are over 100 books specifically on the Basic language, and far more when you add in books like how to program games in Basic and the like. Within this group, it seems to boil down to authors. Personally, I feel that the finest authors in the field are:

Tom Dwyer (and Margot Critchfield)
David Lien
Arthur Luehrmann
Herb Peckham
Bob Albrecht
Fred Gruenberger

That is not to say that there are not many, many other excellent books and outstanding authors. However, the people above consistently produce lucid, interesting material with a touch of wit. Nor have I ever felt cheated or humiliated after reading any of their books. Sad to say, Fred Gruenberger has not been doing much writing lately, but all the others are as prolific as ever.

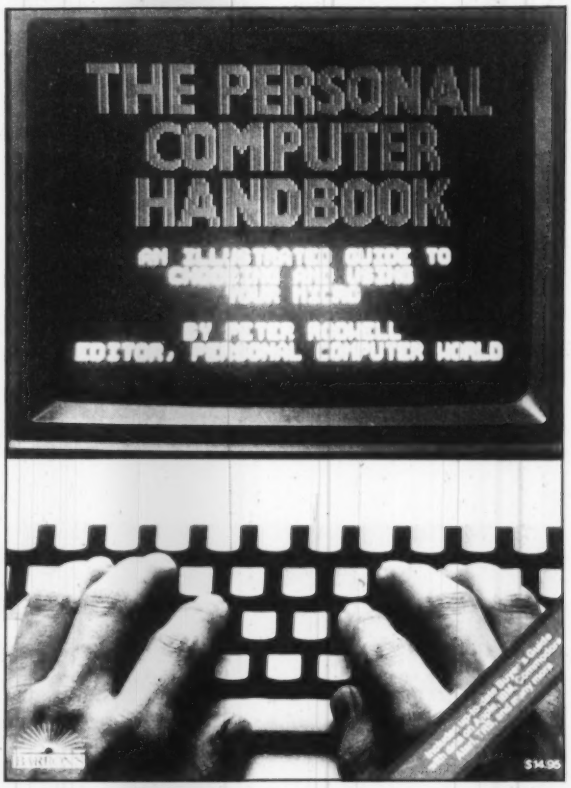
Although it has been around since 1978, I still think *Basic and the Personal Computer* by Dwyer and Critchfield (Addison-Wesley) is one of the best books on the subject. A nice companion piece by the same authors is the *Pocket Guide to Microsoft Basic*. This is one of a series of pocket guides from Addison-Wesley; another one I find useful is the *Guide to CP/M*.

Another old, but excellent series of books on Basic are the self-teaching guides (Wiley) by Bob Albrecht, LeRoy Finkel, and Jerald Brown. They are available for the Basic language in general as well as for specific computers.

David Lien's *The Basic Handbook* (Compusoft Publishing) is a complete step-by-step learner's manual and is very witty, but also a bit pricey at $19.95. David Lien also has written a take-you-by-the-hand series, *Learning Basic*, for various TRS-80 models, Timex 1000, and IBM PC.

Okay, so you want a newer book. One of the best is *Armchair Basic* (Osborne McGraw-Hill) by David and Annie Fox. David and Annie started the Marin Computer Center, an open-to-the-public center, and have plenty of experience teaching programming to people from all walks of life. The book reflects their experience and presents lots of meat in an easy-to-read style.

We have often commented that the Microsoft Basic manuals are among the worst in the world. A big improvement on the manual, but heavier going than the above books, is *Microcomputer*



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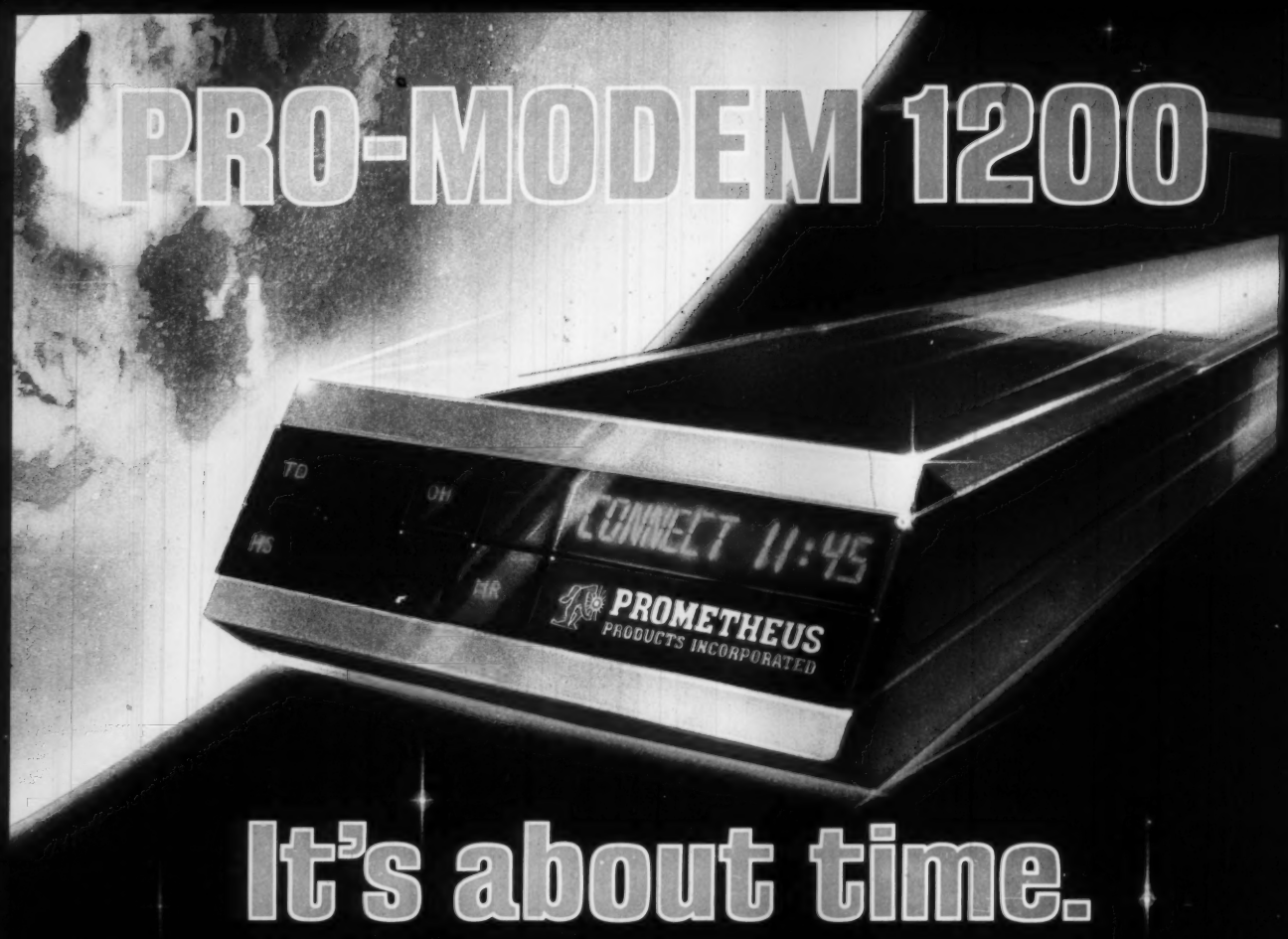

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Programming with Microsoft Basic by Robert Crawford and David Barnard (Reston). This is fairly advanced and shows how Basic can be used to solve some rather interesting problems.

Programming For Youngsters

By far the largest-selling series of books for introducing Basic to youngsters is Sally Larsen's *Computers for Kids* (Creative Computing Press). The content can be grasped by a 7-year-old and requires no knowledge of algebra. Editions are available for most popular computers: Apple, Atari, IBM PC, TRS-80, Timex, Commodore 64, and Vic 20.

Kids and the Apple by Edward Carlston is one of a series of similar books from Datamost. These 218-page spiral-bound books are excellent. They are divided into 33 lessons, each one of which has one page of notes for the instructor or parent followed by several pages for the youngster. Each lesson takes between 30 and 60 minutes to complete. Neat books, although a bit pricey at $19.95 each.

A bunch of computer-related novels have come out in the past few months, but I haven't read one that doesn't make me wince when it comes to the computer technology.

Another series of spiral-bound books are those published by Sterling Swift titled *Computer Programming for Kids and Other Beginners* by Royal Van Horn. Editions for several computers are available. These 128-page books ($9.95) are similar to the ones by Sally Larsen, but go further into graphics, a subject that tends to have high appeal for kids.

Another book that goes somewhat beyond *Computers For Kids* is *Basically Speaking* by Francis Cohen (Reston). The illustrations for RUN and NEW next to every listing are corny and somewhat distracting, but the content is good.

Basic Programming for Kids by Roz Ault (Houghton Mifflin) has a great deal of meat, rivaling some of the adult books. In these days of $15 books, this one is an excellent value at $7.95.

Not exactly a programming book, but one which will give a good start to a youngster (ages 5 to 10) is Nancy Mayer's *Rainy Day Activities for the Atari* (Reston). As the wife of one of the top engineers at Atari, Nancy had an expert advisor available as she prepared this charming book of games and short programs. Good fun!

Computer Literacy

There are so many books that purport to give one an introduction to the amazing world of computers that it is difficult to single out a few good ones. I like the style of Peter McWilliams and his books certainly have been successful, although it seems to me that more depth and more illustrations would have been welcome.

Absolutely the best book on getting started (and moving along) is *The Personal Computer Handbook* (Barrons) by Peter Rodwell. Until recently, Peter has been the editor of *Personal Computer World*, more-or-less the sister magazine to *Creative Computing* in England. As editor of *PCW*, Peter was as close as anyone to all the new products, the companies, and the technology. This large format book is lavishly illustrated—the best I've ever seen—and the text covers the field in depth in a style that is clear and lucid. For beginner and expert alike, there is no better book on small computers, their technology, and the industry. For $14.95, this book is an absolute must.

It seems fashionable to combine a bit of Basic programming with computer literacy; I have mixed feelings about this approach. However, if you like it, the best book for youngsters getting started is *The Random House Book of Computer Literacy* by Ellen Richman. The first 66 pages are about the way computers work and what they do, while the next 100 pages are on Basic programming. Both sections are well-written, and I was pleased to see the chapter on graphics had separate sections for Apple, Atari, Commodore, and TRS-80.

For Relaxation

It seems that 1983 was the year of the humor book, many of which didn't quite make it. We already nominated *Silicon Valley Guy* for the worst book of the year, but balancing it was the end-of-year release, *The McWilliams II Word Processor Instruction Manual*. This hilarious book by Peter McWilliams tells you how to use a pencil (and an eraser too). Full of pictures and illustrations with side-splitting captions, for $3.95, this is a must for your next coffee break.

EDP people will like *The Hacker's Dictionary* (Harper & Row), a funny guide to the world of hacker speak, body language, computer lifestyles, and more. If you have spent anytime around mainframes and raised floor computer rooms in the wee hours, you'll love the "in" stuff that comprises the bulk of this book. If you haven't, it will probably leave you cold.

If you like computer graphics of all kinds, you mourn the fact that Crown decided to let *Artist and Computer* by Ruth Leavitt go out of print. However, there is finally an excellent replacement, *Computer Images* by Joseph Deken. It is published by Stewart, Tabori & Chang and distributed by Workman. The book has 195 oversize pages with 257 illustrations—every one in full color. It is a magnificent volume covering computer images of all kinds: realistic, image enhancement, fantasy, and much more. A wonderful book!

A bunch of computer-related novels have come out in the past few months—I have read six of them—but I haven't read one yet that doesn't make me wince when it comes to the computer technology. The stories are good fun, but the technical details are so farfetched that it detracts from the adventure. I keep looking for a winner, but so far, I think Robert Ludlum and John MacDonald are better bets. However, if I had to pick three, they would be *Wired*, *The Poker Game*, and *Kensei*. ■

"I'd like to take out the whole chemical section on a laser disc."

News and views on 153 new products

Overlooking a portion of the computer exhibits in the newly-opened West Hall.

1984 Winter Consumer Electronics Show

Registration for Winter CES is always a mob scene. Total attendance this year was over 87,000.

Hi-fi and video exhibitors still have the largest amount of floor space, but computer exhibitors are running a close second.

David H. Ahl

Three years ago, computers were a curiosity at the Consumer Electronics Show. Sessions about them were relegated to the last day when many show attendees had already left, and computer manufacturers were shoehorned into the area with calculators and watches. No more. Computers now have their own exhibit area (one of the largest), and the sessions are scheduled at prime time on the program.

Indeed, this year we found that things had almost come full circle. Many journalists were acting blasé, and all too often we heard the comment, "Not much new here." In a sense, that was true. Many of the products were evolutionary in nature, and the new computers announced were predictable in their capability and features. Nevertheless, we found a fair number of products that got our juices flowing and that were, if not exciting, certainly interesting.

Instead of putting everything from CES into one huge roundup, we have divided our coverage by topic. Thus, in this issue, you will find a section on computers and peripherals (following this intro) and separate sections on educational software, games, personal software, and electronic software distribution (a fascinating concept). Other new products are covered in our regular columns on printers, telecommunications, and specific computers.

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THE PERSONAL COMPUTER USERFEST

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CHICAGO

USERFEST/CHICAGO
Thursday-Sunday
May 3-6, 1984
10:00AM to 5:00PM daily
O'Hare Exposition Center
9291 West Bryn Mawr Rosemont, Illinois
(next to Chicago's O'Hare Airport)

NEW YORK

USERFEST/NEW YORK
Thursday-Sunday
September 20-23, 1984
Madison Square Garden
10:00AM to 5:00PM daily

For information about exhibiting at the Personal Computer Userfests, call or write Northeast Expositions, 822 Boylston Street, Chestnut Hill, Mass 02167. Tel: 617-739-2000.

For hotel information call or write Trade Show Department, Fox Travel, P.O. Box 498, Waltham, Mass 02254. Tel: 617-890-1770 or 800-225-8410 ext. 314.

Userfest (formerly known as Applefest and PC'83) is produced by Northeast Expositions, 822 Boylston Street, Chestnut Hill, Mass 02167.

CIRCLE 177 ON READER SERVICE CARD

ADVANCE TICKET ORDER FORM

Mail this form (or a facsimile) with full payment to Northeast Expositions, 822 Boylston Street, Chestnut Hill, Mass 02167. Tel: 617-739-2000. No ticket orders accepted 14 days or nearer to each Show. Your tickets will be mailed one month prior to the Show. Sorry, no telephone or credit card orders please.

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Address: _____

City: _____ State: _____ Zip: _____

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Enclosed is full payment for:

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CIRCLE 198 ON READER SERVICE CARD

Computers

Peripherals, Software, and Servicing for Coleco Adam

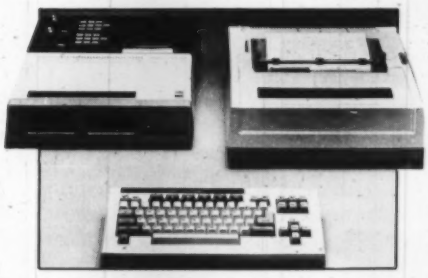
Coleco announced an impressive line of peripherals and software for the Adam. The peripherals all connect to the "Adam Bus" and include a $5^1/_4$" double density, double sided floppy disk drive (under $400); 300/1200 baud direct connect modem and telecommunications software (under $200); 64K RAM card; second digital data drive (under $150); tractor feeder for fanfold paper; and accessory kit (three daisy wheels, blank tape, and head cleaner).

In addition, Coleco announced the coming availability of 170 software packages. Several in the entertainment line are licensed versions of games from third-party manufacturers. In addition, seven of these manufacturers plan to market Adam software directly.

Beyond the applications software, Coleco also announced CP/M and, for later in 1984, compatibility with the IBM PC. Sounds ambitious to us, possibly too much so for a company that has been in the computer field for less than three months.

Service for the Adam is to be provided by Honeywell under a new arrangement. Honeywell currently has five Coleco service centers operational, and 30 more are scheduled to come on line in the next few months. We feel compelled to ask, "Can that many trained service people be brought on line all at once?"

At the Coleco press conference, the new product introductions went off



without a hitch, but they probably should have cut it off there. The question session produced several rough moments for Arnold Greenberg, the president. One person recounted a horror tale of two sick Adam computers and asked why the company was unable to get either one fixed. Greenberg said, "See me after the press conference, and we'll get it resolved."

Another person asked why no machines had been shipped to magazines for review. Some people in the audience whispered, "Because they don't work." The official answer was, "They'll be shipped in a few weeks." We'll see. Questions about IBM PC compatibility and the recent agreement with AT&T were all met with a "No comment."

As to reports published in *USA Today* and other newspapers that the Adam initial defect rate is around 30 to 40%, a Coleco spokesman responded that it is "simply not true."

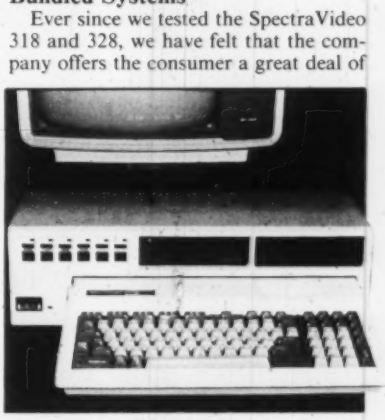
In a low key move, Coleco also raised the wholesale price of Adam by about 20% bringing it to $650. Foregoing the "normal" 30% markup, most dealers in the New York area are selling the Adam for $700-$799.

Coleco Industries, Inc., 999 Quaker Lane South, West Hartford, CT 06110. (203) 725-6000.

CIRCLE 426 ON READER SERVICE CARD

SpectraVideo Announces Bundled Systems

Ever since we tested the SpectraVideo 318 and 328, we have felt that the company offers the consumer a great deal of



performance for the price. Unfortunately, Microsoft was late in delivering Basic chips to SpectraVideo, and SV missed having product on the shelf during the crucial Christmas season.

As a result, SV has dropped the low-end 318 and is concentrating on the mid-range 328 (in bundled systems).

The Family Pak Plus ($599) is designed to meet the Coleco Adam head on. In addition to the basic 328 (with full-stroke keyboard), it includes a high speed cassette recorder (1800 baud), 50 cps dot matrix printer, two joysticks, word processing software, *SpectraDiary* (a time organization package), and *Spectron* (a colorful, challenging game).

The 328 Pro System includes the 328 Mark II with 80-column card, expander box with two low profile $5^1/_4$" floppy disk drives and six slots for other boards, 80 cps dot matrix printer, monochrome monitor, CP/M 2.2, Microsoft Basic, and the Perfect Software library *(PerfectWriter, -Speller, -Filer,* and *-Calc).* A most impressive system!

SV was also showing the 728, the first MSX standard machine in the U.S. At a recent Japanese show, Sanyo, Matsushita, Yamaha, Sharp, and JVC showed MSX computers in the $250 range. However, none of these manufacturers showed an MSX machine at the Winter CES. Thus, for the time being, SpectraVideo will be carrying the MSX flag alone.

On the software front, SpectraVideo announced a wide range of CP/M software for the 328. It will be marketed by an independent maker, Add-On Software, Inc., 11879 Dublin Blvd., Dublin, CA 94568. (415) 833-8330.

SpectraVideo, 45 South Service Rd., Plainview, NY 11803. (516) 420-6990.

CIRCLE 427 ON READER SERVICE CARD

Apple Mouse and Winchester Disk Software for the IIe

In an unexpected move, Apple Computer exhibited at CES in a diminutive 20 x 20 foot booth. Normally, Apple either takes a huge booth or ignores a show completely.

Apple was showing the same products described in our coverage of Comdex last month. With this activity in new products and showing at a trade show for consumer markets, it appears that Apple hasn't written off the Apple II as some of the popular press would have us believe.

Apple Computer, 10260 Bandley Dr., Cupertino, CA 95014. (408) 996-1010.

Laser 3000, an Apple Work-alike from Video Technology

V-Tech was again showing the Laser 3000, an Apple work-alike with many extended features. The machine, which supposedly is completely original, should be available this spring for a retail price of $695. The basic Laser 3000 has 64K (expandable to 192K), 80-column text display, Centronics parallel printer interface, four-channel sound

generator, eight programmable function keys, numeric keypad, and built-in Microsoft Basic with all the extended graphics commands. There are three graphics modes, one of which provides 560 x 192 pixel resolution with six colors.

V-Tech was also showing a $5^1/_4$"

floppy disk drive for the Laser 3000 (or Apple) with 164K capacity. Price is under $200.

Also on display was the Laser 200 (reviewed May, '83) and a mid-range model, the 2001, which is able to run ColecoVision software.

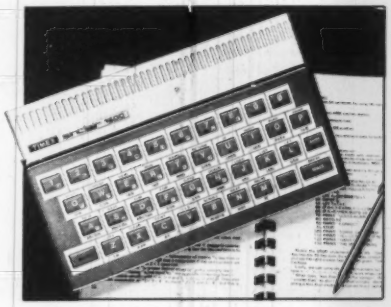
Video Technology (U.S.) Inc., 2633 Greenleaf Ave., Elk Grove Village, IL 60007. (312) 640-1776.

CIRCLE 428 ON READER SERVICE CARD

New Modem and Printers from Timex

Timex was again showing the 2068 and 1500 computers, but were emphasizing a new TS 2050 modem ($119.95), TS 2080 80-column dot matrix printer, TS 2040 32-column thermal printer ($99.95), and an expanded selection of software.

The 2050 is a 300-baud modem with auto-dial, auto-answer, built-in modular phone jacks, and data buffer. It includes



a Smart Terminal I cassette software kit and membership in The Source. An optional Smart Terminal II software package is available on cartridge. Also available for $169 is a package of telecommunications services which includes memberships and usage time in CompuServe, Dow Jones News Retrieval, MCI Mail, and The Source.

The 2040 thermal printer features complete graphics and text capability in two modes: screen print and program controlled. Print speed is two lines per second.

With all the hoopla about the 2068 computer, many people have overlooked the 1500, one of the least expensive entries into the world of computing ($79.95). The 1500 has 16K of RAM, built-in Sinclair Basic with single key entry of all keywords, 22 graphics characters, PLOT and UNPLOT graphics statements, and improved keyboard (although it still does not have a spacebar).

Timex Computer Corp., Waterbury, CT 06725.

CIRCLE 429 ON READER SERVICE CARD

Keyboard for Intellivision From Mattel (Again)

Following in their years-old tradition, Mattel Electronics again introduced a computer adaptor (sic) and keyboard for Intellivision. According to the press re-

Product Preview

Commodore Unveils 264 and 364V Computers

Sheldon Leemon

Commodore's new 264 series of computers does not present any surprising technological advances. These computers are more like an interesting variation on a familiar theme. Like previous Commodore computers, the 264 is based around a 6502-type microprocessor, is compatible with some, but not all, existing Commodore peripherals, and is software incompatible with every other Commodore computer. Its most innovative feature is the built-in applications software in ROM that enables the user to perform specific tasks as soon as he gets the computer out of the box.

The natural comparison to make in describing these computers is with the 64, Commodore's most popular model. Generally speaking, the 264 and 364V offer less than the 64 in the way of graphics, sound, and I/O hardware and try to compensate with improved software. Where the 64 has a separate dedicated processor chip for graphics, one for sound, and two powerful input/output chips, the 264 series has only one chip, called the TED chip, to perform all of these functions. The result is some major cutbacks in the areas of graphics and sound. The new series does not have the sophisticated three-voice, eight-octave sound synthesizer with its provisions for envelope and waveform control, filtering, synchronization, and ring modulation that the 64 has. Instead, these computers are limited to two simple tone generators, one of which can generate "white noise" for sound effects. Likewise, the 264 series lacks sprite graphics, which provide an easy method of animating objects on the 64 screen.

The character and bit-map graphics scheme on the new series is almost exactly the same as that on the 64, with some small but nice improvements. While both the 264 and the 64 have a maximum of 16 primary colors available, the 264 has a better color selection (three of the colors on the 64 are shades of gray), and each color can be set to one of eight different luminance levels for a total of 128 possible shades. In addition, any text character can be designated as a "flashing" character, which will blink on and off like the cursor.

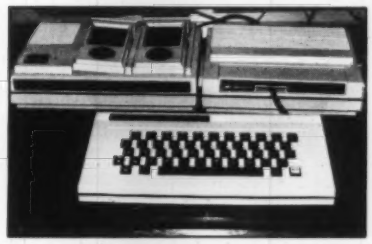
Built-In Software

In other areas of hardware comparison, the 264 series holds its own, and in some respects even bests the 64. Its 7501 microprocessor uses the same instructions as the 6510 on the 64, but runs at a 1.76 MHz clock speed, which makes it a considerably faster processor than the one used by the 64. Although it has the same 64K RAM standard with the 64, it uses a more sophisticated method for bank-selection of ROM programs that allows it to choose from any one of four 32K ROM programs at a time.

The 264 has internal slots for two such ROM programs, one of which is occupied by an expanded 32K Basic interpreter and operating system ROM. The 364 has internal slots for three ROM programs, including Basic and the operating system. Additional ROM programs can be plugged into a memory expansion cartridge slot, which can access up to two 32K ROM programs on cartridges that can be "piggy-backed."

Commodore will use the extended internal ROM capability to provide built-in applications software. They have stated their intention to sell several different models of the 264 and 364V, each with different software in internal ROM. They have mentioned a word processor, their *Magic Desk* program, and *3-PLUS-1*, a combination word processor, file manager, spreadsheet, and graphing program as possible options.

Also shown at CES were models for



lease, "The Computer Adaptor plugs into the Master Component and unlocks the power of the 16-bit microprocessor." The adaptor includes built-in Basic in a 12K ROM, an additional 2K of RAM, RS-232 interface, and increases the sound channels to six.

The keyboard has 49 Chiclet-style, full travel keys with four cursor directional keys at the left side. According to a Mattel spokeswoman, the computer adaptor and keyboard are currently available.

Mattel also announced a "System Changer" that allows the Intellivision II system to play Atari 2600 games. In addition, Mattel was showing a music synthesizer with 49-key piano-style keyboard for use with Intellivision II. To round out their display, 12 new Intellivision games and five games for Apple and IBM computers were at their booth.

Mattel, Inc. recently sold Mattel Electronics to a group of investors so we don't know if these new products will carry the Mattel brand name.

Elan to be Available in U.S.

In our PCW Show coverage (Dec. '83), we reported with some enthusiasm about the Elan Enterprise 64. Thus, we were pleased to see it at CES (translation: it is nice that we here in the States may get a chance to buy one).

The Elan Enterprise is based on the Z80A (4MHz) and has 64K of RAM, 32K of ROM, 68 full-stroke keys with built-in joystick, display of 84 characters x 56 lines (or 672 x 512 pixels) in color, four sound channels, and many extras. We are very impressed with the specifications—now all we would like is to see one in the flesh!

Elan Computers, Ltd., 31-37 Hoxton St., London N1 6NJ, England.

CIRCLE 431 ON READER SERVICE CARD

16-bit Business Computer from Olympia

Olympia USA, the domestic division of the German manufacturer of high quality typewriters, was showing their first computer, the People. It uses a 16-bit 8086 mpu, and has 128K of RAM built in. Like the IBM PC, the People has a detachable keyboard (91 keys and 12 programmable function keys), and system unit with dual double-density, double-sided disk drives (655K each),

the educational market with Logo and Pilot as standard languages. If the consumer later decides that he wants a different package built-in, it should be possible to have the ROM changed, but all built-in software will also be available separately on cartridge. In addition to the internal applications software, the 364V will also come with Commodore's Magic Voice speech synthesizer and 16K of speech software on ROM.

The memory access scheme used by the 264 series allows not only more ROM in the system but more effective use of the RAM. For example, despite the fact that the Basic interpreter and operating system occupy twice as much ROM on the 264 as on the 64, the 264 has more than 59K of RAM workspace available for Basic programming as opposed to the 38K available on the 64. Another area of improvement is in the RS-232 port. The use of software to emulate an ACIA chip on the 64 limits its baud rate to about 1200 baud, but the 264 has an actual ACIA, which allows communication to take place at a rate as high as 19,200 baud.

Improved Keyboard

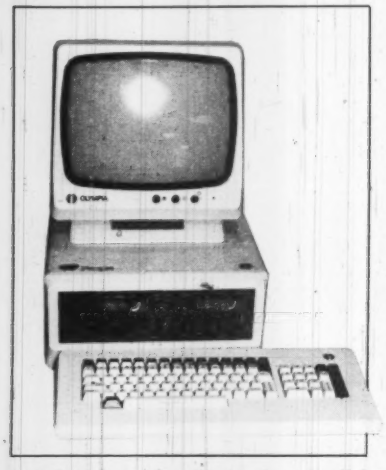
The external hardware comprising the case, the keyboard, and the I/O connectors is considerably different on the 264 than on the 64. The case of the 264 is several inches shorter in length than the Vic/64 case, and the styling is considerably more streamlined—very much like a miniature Atari 800. Although it has 67 keys, just one more than the 64, considerable improvements have been made in the keyboard layout; including the addition of four separate arrow-shaped cursor movement keys and an Escape key. The four function keys have been moved to the row above the keyboard, and one of them is designated the HELP key. The RESTORE key has been replaced by a reset button near the on/off switch.

The 364V model also has a 19-key numeric keypad, which makes its case roughly the same size as that of the 64. Unfortunately, the keyboard itself seems to be of a lower quality than that on the current 64 (keyboard quality is always subject to change, however, as several different keyboards have been used at various times on the Vic and 64).

Along with these changes in the keyboard layout, changes to the screen editor in the operating system allow line insertion and deletion and the setting of margins at the top, bottom, and sides of the screen to create a "window." Other screen editing changes include the use of the ESC-O sequence to cancel insert or quote mode, and CONTROL-S to halt output to the screen temporarily.

Peripheral Compatibility

The connectors on the back of the case help to tell the peripheral-compatibility story. The User Port connector is the same as the one on the 64, and many peripherals that plug into that port, such as modems, will be compatible with the 264. Likewise the serial port, which is used to connect the computer to serial printers, and the 1541 disk drives are the same, and those peripherals can be used with the 264.



and interfaces for Centronics parallel printer and RS-232 serial device.

Three operating systems are available for the People: CP/M-86, Concurrent CP/M-86, and MS-DOS. Also available is a wide array of applications software.

Olympia USA Inc., P.O. Box 22, Somerville, NJ 08876.

CIRCLE 432 ON READER SERVICE CARD

Royal Business Machines Personal Computer

Royal Business Machines, a long-established maker of typewriters, entered the computer market with the Alphatronic Personal Computer. The machine has a Z80A mpu, 64K of RAM, 32K of ROM (includes Microsoft Basic), and interfaces for RS-232 devices, Centronics parallel printer, floppy disk drive, and cassette recorder.

The keyboard has 79 keys including six programmable function keys. Two text display formats are available: 80 characters x 24 lines and 40 x 24. Eight foreground and background colors can be selected.

ROM cartridges with applications software plug into a slot on the left (under a cover). Also available is a $5^1/_4$" slim line double density disk drive with 320K capacity. Price for the basic machine is $695.

Royal Business Machines, 500 Day Hill Rd., Windsor, CT 06095. (203) 683-2222.

CIRCLE 433 ON READER SERVICE CARD

But the cassette connector is of the new European mini-DIN variety, so the old Datasette recorders cannot be used by the new series, nor can their tapes be read by the new Datasette. Likewise, the joystick ports use the new round DIN-type plug, so none of the existing joysticks on the market today can be used with the 264. Finally, the Memory Expansion port into which the user plugs ROM program cartridges is different, so 64 cartridges will not work with the new line of computers.

Operating System

We now turn to the area of operating system, where substantial improvements have been made over earlier Commodore computers. First, the operating system ROM, including the Kernal, the Basic interpreter, and character generator, has been expanded from 20K on the 64 to 32K on the 264 series. The 264 and 364V come with Basic 3.5, by far the most powerful Basic interpreter offered on a Commodore machine to date.

It contains all of the Basic 4.0 disk commands except for DOPEN, DCLOSE, and RECORD, as well as the improved string handling of Basic 4.0.

It features program editing commands such as auto line numbering, DELETE, RENUMBER, and KEY, which lets you designate strings of texts to be printed each time that you press one of the function keys. It also contains the error-trapping commands TRAP, RESUME, and ERR$.

Structured programming commands such as IF-THEN-ELSE, DO, LOOP, EXIT, WHILE, and UNTIL have been added, and neatly formatted output is available via the PRINT USING command. Hexidecimal conversion commands have been added, along with the logical operator XOR.

If the graphics and sound capabilities of the 264 series are less extensive than those of the 64, at least the Basic 3.5 on the 264 fully supports those capabilites. This is in sharp contrast to the 64, the Basic interpreter for which sorely lacks support for the graphics and sound hardware. Basic 3.5 contains commands such as GRAPHIC, PAINT, BOX, CIRCLE, COLOR, SCNCLR (screen clear), SSHAPE, GSHAPE (for saving and retrieving images from the bit-map graphics screen), and SCALE. New functions have been added to read the color, luminance, and on/off status of each dot on the bit-map screen, as well as to read the joysticks. SOUND and VOL commands are used to control the two tone generators.

Besides the extended Basic, the new operating system ROM also contains a machine language monitor. Unlike the Tiny Monitor found in earlier Pet/CBM machines, it is a true extended monitor with assembly and disassembly capabilities.

New Peripherals And Pricing

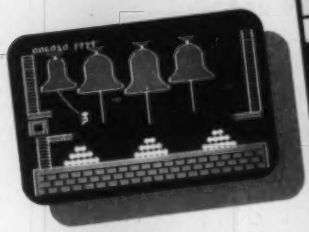
Some new peripherals will be made available when the 264 series is released in April. The SFS 481, a new parallel disk drive that plugs into the cartridge slot of the 264 will have a data transfer rate several times that of the 1541 serial drive. Commodore also promises a new daisywheel letter-quality printer, the DPS 1101, and a new color monitor, the 1703, as well as a 1531 cassette drive to go along with the new series.

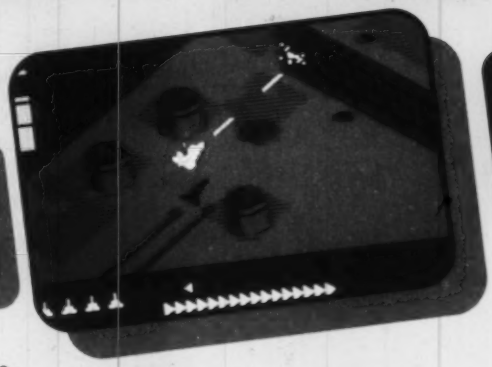
No prices have been announced either for the new series of computers or for the new peripherals. The best guess of industry watchers is that the 264 will sell somewhere in the $300 price range, and that the 364 will be priced under $500. The peripherals should be similarly low-priced.

There has been much speculation on the effect that this new series of computers will have on the marketing of Commodore's current line. Some predict that there will be a revolt by consumers who are fed up with Commodore introducing one incompatible computer system after another, leaving their previous products obsolete. Some question why consumers would be willing to pay more for a computer that has less hardware capability than the 64 and obviously costs less to make. Others have said that retailers will not be willing to stock hardware and software for all of Commodore's systems, and that the struggle for shelf space will cause the new series either to fail or to replace the 64 entirely.

Commodore has strongly denied that they intend to drop even the Vic 20 as a result of the new series, much less their popular 64 model. They point out that they are still making versions of every computer they ever manufactured, and that their CBM systems are selling better now than when first introduced as the Pet in 1977. It seems fair to take them at their word when they say that in the end, it will be the buying public who decides which computers they will produce. END

ZAXXON FOR THE C-64!





Quasimodo
Quasimodo knows who stole the crown jewels. He even knows where they are, but the soldiers just won't leave him alone! This multi-screen arcade adventure is a great combination of skill and strategy.

Commodore 64 disk & cassette

ZAXXON
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Commodore 64 disk & cassette

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Commodore 64 disk & cassette

More C-64 Titles:
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All Synapse entertainment titles are available at software dealers everywhere, or direct from Synapse for $34.95 ($39.95 for ZAXXON) plus $2 handling. Send check, money order or VISA/MasterCard number.

Write for a FREE Synapse catalog.
Synapse games are also available for the Atari, Apple and IBM computers.

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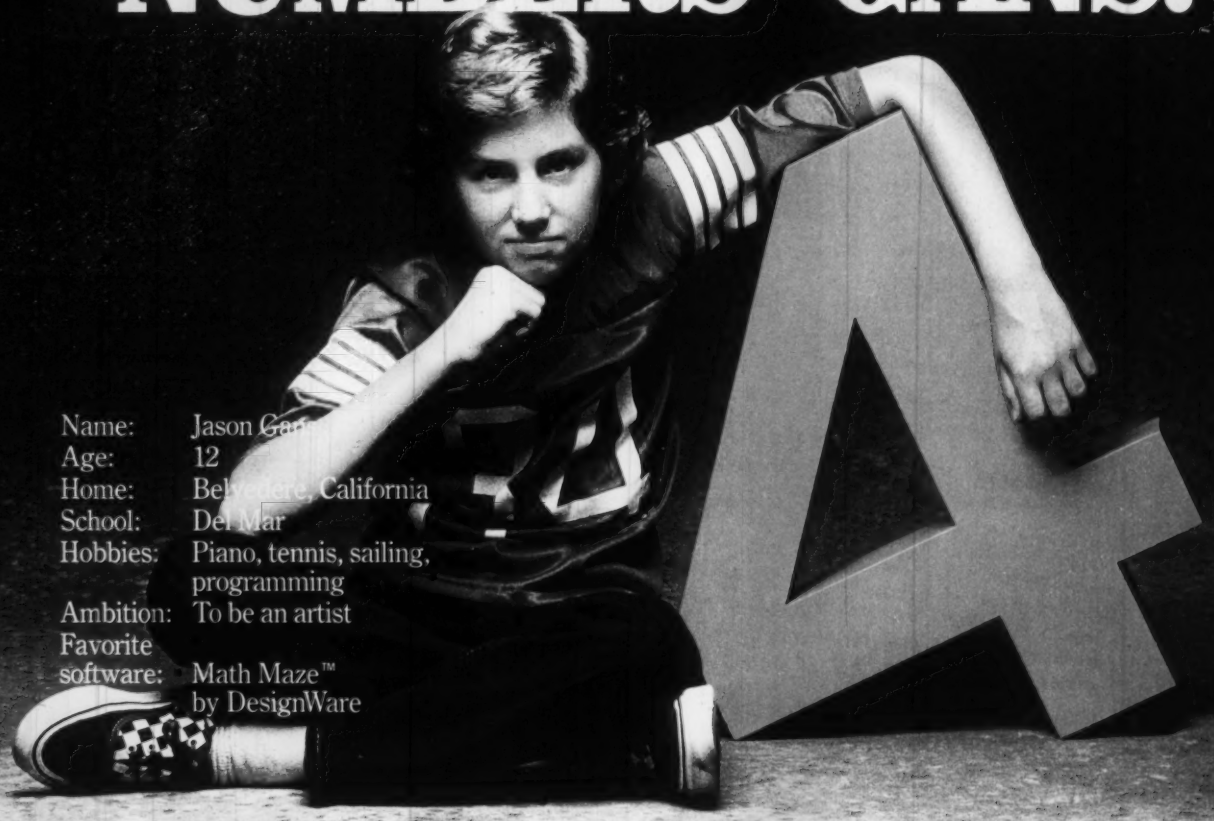
CIRCLE 200 ON READER SERVICE CARD

THEY CALL HIM "NUMBERS" GANS.



Name: Jason Gans
Age: 12
Home: Belvedere, California
School: Del Mar
Hobbies: Piano, tennis, sailing, programming
Ambition: To be an artist
Favorite software: Math Maze™ by DesignWare

"*Math Maze* is neat because you do more than just add and subtract numbers all the time. You've got to find them first. And then get there before you get caught.

"It's got real good graphics. I can even change the background color. And make the math as challenging as I want.

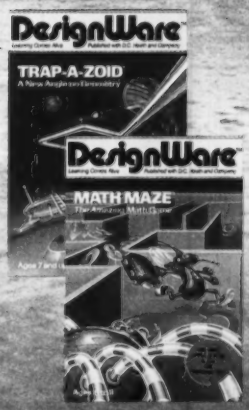
"There's lots of mazes, too. But the best thing is, I can make up my own. So when my friends come over, I've always got something new."

DESIGNWARE MAKES LEARNING COME ALIVE.

DesignWare math programs, like all DesignWare games, combine computer fun with sound educational principles to help improve your youngster's academic skills. The spelling game *Crytpo Cube,*™ in fact, has just been selected by LEARNING magazine as one of the year's outstanding software products. There are many other DesignWare programs too, in spelling, geometry, and language arts.

All DesignWare programs run on these computers with disk drive: Apple,® Atari,® Commodore 64,™ IBM PC and IBM PC Jr. See your local software retailer or call us at (800) 572-7767 (in California, 415-546-1866) and ask for our free catalog.

As Jason Gans says, "Hey—they don't call me 'Numbers' for nothing, you know!"



DesignWare™

LEARNING COMES ALIVE.

Commodore 64 is a trademark of Commodore Electronics Ltd. IBM PC and IBM PC Jr. are registered trademarks of International Business Machines, Inc. Apple is a registered trademark of Apple Computer, Inc.

CIRCLE 136 ON READER SERVICE CARD

Sanyo Announces IBM Compatible Unit

Jumping on the IBM PC compatible bandwagon, Sanyo introduced the MBC 550, a 16-bit computer with 128K of RAM, 160K disk drive, Centronics parallel printer port, hi-res color graphics capability (NTSC or RGB), speaker, and joystick port. The machine is compact (15" x 14" x 4.3") with a detached keyboard, and color or monochrome monitor.

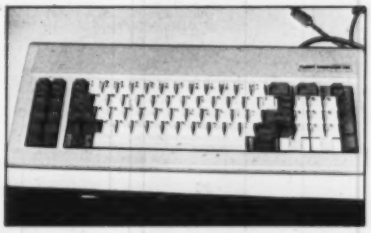
The bundled software includes Sanyo Graphics Basic, MS-DOS, *Easy Writer*, *WordStar*, and *CalcStar*. The bundled price (without monitor) is only $999, nearly $1900 under the comparable system from IBM.

Sanyo Business Systems Corp., 51 Joseph St., Moonachie, NJ 07074. (201) 440-9300.

CIRCLE 434 ON READER SERVICE CARD

IBM PC Keyboard from Rabbit Computer

Rabbit was showing the RBK-201, a capacitance keyboard for the IBM PC. It has 83 keys including ten programmable function keys and numeric



keypad. Like the Keytronics and other replacement keyboards, the RBK-201 has a more "standard" layout than the IBM PC so that touch typists will not hit unintended keys accidentally. Also, the capacitance design gives it a lighter touch than mechanical keyboards. Suggested list price is $199. A version may be made available for the Apple also.

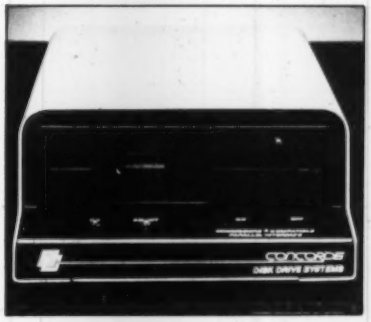
Rabbit was also showing a Z80-based computer with 80K, 256 x 192 pixel resolution with eight colors, extended Basic, 32 graphics sprites, three sound channels, and many other nifty features. At $299 it is a bargain, but it was not clear whether or when it would be available in the U.S.

Rabbit Computer Inc., 39-01 Main St., Flushing, NY 11354. (212) 961-8623.

Disks, Drives, and Disk Care Products

Fast, Compatible Disk Drives from Concorde

Concorde Peripheral Systems, a major manufacturer of disk drives, announced the C-321-P disk drive for the Commodore 64 featuring a high-speed parallel interface. This unit provides greatly



increased speed compared with the Commodore 1541 serial drive, yet it is completely software compatible. The C-321-P interface plugs into the game cartridge slot and has output ports for up to four drives, a modem, or other devices. Including one half-height single-sided drive (174K), the price is a modest $356. A double-sided drive is available for $446.

Concorde also offers a wide selection of single- and double-sided drives for Apple II, IBM PC, TRS-80, Atari, and TI computers. In addition, they have a line of compact 3¼" Sony-type drives —single- and double-sided—for Apple and IBM computers. Retail prices tend to be 25% to 40% lower than comparable drives from the computer manufacturers.

Concorde Peripheral Systems Inc., 23152 Verdugo Dr., Laguna Hills, CA 92653. (714) 859-2850.

CIRCLE 435 ON READER SERVICE CARD

Expanded Disk Capacity for Apple II and III from Micro-Sci

In our coverage of Applefest (Feb. 1983, p. 89), we mentioned the Micro-Sci A82, an 80-track double-density drive with considerably faster track-to-track access time than original equipment Apple drives ($699 with controller), and the A2, a cost-effective plug compatible drive ($445 with controller).

Micro-Sci also offers three drives for the Apple III, two of which offer greater speed and capacity than the original equipment Apple drive. The top-of-the-line A143 drive is a double-density unit (140 tracks) with 5MSec access time, 572K capacity, and SOS driver. Price is $659.

Micro-Sci, 2158 S. Hathaway St., Santa Ana, CA 92705. (714) 662-2801.

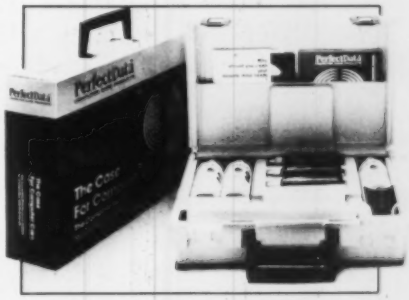
CIRCLE 436 ON READER SERVICE CARD

Premium Floppy Disks and Cleaning Kits from PerfectData

PerfectData, PermaByte Magnetics, and Polaroid announced a joint venture to market a premium line of floppy disks under the dual Polaroid and PerfectData labels. Using its special technology, Polaroid will apply a film coating to the

raw media which will be converted into finished disks by PermaByte; the disks will then be marketed by PerfectData.

PerfectData also announced The Case, a computer care system which contains virtually every type of cleaning solution and material necessary for maintaining a computer system and peripherals. The Case holds two drive cleaning disks, head cleaning solution,



CRT screen cleaning solution, plastic case cleaner, lint free wipes, two printer platen cleaners, and anti-static spray. Retail price is under $50.

For printer maintenance, PerfectData was showing two kits, one for cleaning daisy wheel and ball-type printing elements with a special container that ensures that cleaning fluid will not splash onto your hands or other equipment, and an innovative dot matrix head cleaner for under $10.

PerfectData Corp., 9174 Deering Ave., Chatsworth, CA 91311. (213) 998-2400.

CIRCLE 437 ON READER SERVICE CARD

New Disk Line and Free Exercise Guide from Verbatim

To introduce the ValuLife line of disks, Verbatim displayed the new line in a health-oriented environment at their CES booth. Denise Austin, an exercise specialist, designed and demonstrated 20 exercises to help alleviate the stress and tension that can build up during extended periods in front of a computer or terminal.

Pictorial descriptions of these 20 exercises are available in a free booklet, "Tone Up At The Terminals," to anyone requesting it (up to 100 copies) from Verbatim.

In addition, booth visitors were able to obtain a lifestyle appraisal. This health risk program was developed by Dirk Martin and Deborah Knapinski at the Institute for Lifestyle Improvement at the University of Wisconsin. After completing a series of questions regarding lifestyle and habits, participants received a printout revealing their "health age" as opposed to their chronological age. Both of us who completed the program found our health age to be a bit older than we were—being a magazine editor is no picnic! It told me, for example, that I could reduce my chances of dying if I obtained "an appropriate weight" and exercised more.

The ValuLife line of disks, aimed at high volume retailers, comes in twin-packs or ten-packs and is priced very competitively.

Verbatim, 323 Soquel Way, Sunnyvale, CA 94086. (408) 245-4400.

CIRCLE 438 ON READER SERVICE CARD

Discwasher Introduces Interactive Disk Head Cleaner

Clean Runner, an interactive disk head cleaner from Discwasher is "designed to lead the computer user step-by-step through the cleaning process." The Clean Runner utilizes a lint-free cleaning surface bonded to a polyester diskette. The included software program directs the drive head to a different track for each cleaning, providing a

discwasher
Clean Runner
Interactive Drive Cleaner
DISK DRIVE CLEANER
Clean Runner is a single disk incorporating a safe cleaning surface and a controlling software program.

contamination-free cleaning surface. The cleaning operation takes 30 seconds and each disk is good for 20 uses.

Discwasher, 1407 N. Providence Rd., Columbia, MO 65205. (314) 449-0941.

CIRCLE 439 ON READER SERVICE CARD

Monitors

For the longest time, the monitor market belonged to a small group of manufacturers. However, in the last six months, the competition in monitorland has picked up considerably.

Although Amdek was not an exhibitor at CES, they certainly were in evidence. Practically every software manufacturer was using Amdek monitors with a discreet little sign, "Monitor by Amdek." It probably cost Amdek about the same to loan these monitors as it would have to have a booth, but the strategy was very effective since showgoers saw Amdek monitors up and down all the aisles.

Several computer manufacturers who also make (or OEM) monitors were showing them at their own booths. These include NEC (beautiful RGB and NTSC units), Toshiba, Sanyo, Apple, Commodore, and HP. Sakata had a booth showing only monitors (see review in *Creative Computing*, Mar. 1984). In addition, four other companies announced monitors at the show.

Leading Edge

Leading Edge announced the Gorilla, a 12" high-resolution green screen monitor. It has a display format of 80 columns by 25 lines of text or 800 lines graphics resolution. With a video bandwidth of up to 22 MHz (min. 18 MHz), the dot pattern is dense and vivid compared to a fuzzier image produced on many 15 MHz monitors. The input is composite video. A small LED on the front panel indicates when the the monitor is on or off.

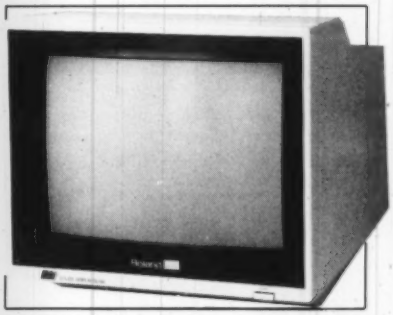
Leading Edge Products, Inc., 225 Turnpike St., Canton, MA 02021. (617) 828-8150.

CIRCLE 440 ON READER SERVICE CARD

Roland DG

Roland DG (Digital Group) is a new division of Roland Corp., a leading producer of synthesizers and electronic musical instruments. At CES, Roland unveiled a line of six high quality monitors.

The top of the line unit ($795) is a 14" RGB color monitor with 640 x 200 pixels resolution (graphics) or 80 x 25

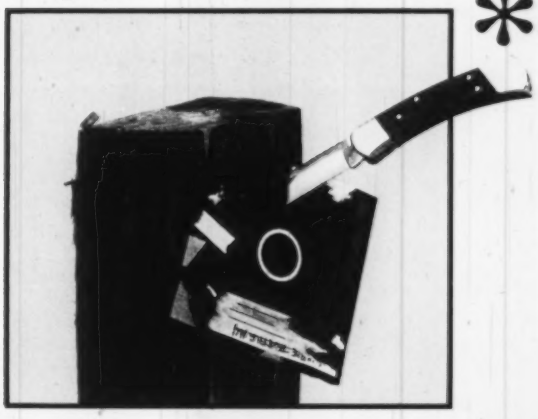


characters of text. One step down ($395) is a 14" composite color monitor with 270 lines (graphics) or 40 x 25 (text).

Four monochrome monitors include two green and two amber units. The MB-121G is a 12" low flicker unit for composite video with 640 x 200 pixel

Is your word processor losing files because of minor disk problems?

QUIT BITCHIN!



michael shrayer's

Electric Pencil PC™

. . . will load the files from this disk* — or any other disk that is damaged. It is the BULLET PROOF (and knife proof) word processor for the IBM PC/XT. You do not lose data working with ELECTRIC PENCIL PC — no matter what you or the kids or the dog accidentally do. See for yourself. Ask for a personal demonstration at your computer dealer today.

Electric Pencil PC ... $299.95
Pencil Tutor $49.95
Pencil ACE $149.95

$50 rebate when you buy all three as the PROPAK!!

* Disk on file at IJG corporate headquarters. (The directory entry of files to be recovered must be intact.)

Available at B. Dalton bookstores, computer stores, Ingram, Micro D and other nationwide distributors— or order direct.

IJG

Order from your favorite distributor or order direct. IJG, Inc., 1953 West 11th St., Upland, CA 91786 (714)946-5805

* IBM is a registered trademark of International Business Machines Corp
** Electric Pencil PC is a trademark of IJG, Inc.

CIRCLE 224 ON READER SERVICE CARD

A Little Bug Can Do A Lot Of Damage.

It looks so little, but it eats so much—just like the contamination on your computer's disk drive head. It may not seem like much, but all it takes is a micro-sized particle of dirt to wipe out a lot of data, and once it's gone, it's gone forever.

That's why you need PerfectData. The PerfectData Disk Drive Head Cleaning Kit eliminates problem-causing dirt so you can keep your computer and your data the way you want it—perfect.

The PerfectData Disk Drive Head Cleaning Kit cleans single or dual-sided drives simply and effectively.

PerfectData's patented wet/dry method is the cleaning method recommended by most leading computer and disk drive manufacturers.

The Disk Drive Head Cleaning Kit is just part of a whole family of PerfectData Computer Care Products—all designed to keep your computer and your data in perfect shape. So don't let a bug eat holes in your rose (or data). Visit your Computer Dealer today for PerfectData products. PerfectData Corporation, 9174 Deering Avenue, Chatsworth, CA 91311.

Keep It Perfect.

PerfectData
COMPUTER CARE PRODUCTS

PerfectData is the new name of Innovative Computer Products—the leader in computer care since 1976.

CIRCLE 151 ON READER SERVICE CARD

resolution (graphics) or 80 x 25 (text). The MB-122G is a TTL signal unit (for IBM PC, etc.) with a 12″ screen and 720 x 350 pixel resolution. Both units are available in amber.

Roland DG Corp., 7200 Dominion Circle, Los Angeles, CA 90040. (213) 685-5141.

CIRCLE 441 ON READER SERVICE CARD

Tatung

Tatung, a Taipei manufacturer of audio and video equipment, was showing a new line of six monitors. Two 13″ RGB units seemed to have identical specs: 640 x 400 pixel graphics resolution or 80 x 25 text. A 13″ composite video unit boasts 260 x 300 graphics resolution and 40 x 24 text.

The DM-12V is a stylish green screen monitor on a tilt and swivel base with 1000-line resolution. Two other monochrome units have "industrial" type styling. The 12″ unit has 800-line resolution and the 9″ one has 650 lines. No information on pricing, but judging by other Tatung products, it should be very competitive.

Tatung Co. of America, 2850 El Presidio St., Long Beach, CA 90810. (213) 637-2105.

CIRCLE 442 ON READER SERVICE CARD

Samsung

Samsung, a Korean audio/video manufacturer, showed two monitors. The CD-1451D is a 14″ composite video color monitor with 250 x 320 pixel graphics resolution while the MD-9051D is a stylish 9″ green screen unit (no specs on resolution). Prices were not specified, but again, judging from other Samsung products, we expect them to be very competitive.

Samsung Electronics America, 117 Seaview Dr., Secaucus, NJ 07094. (201) 867-7575.

CIRCLE 443 ON READER SERVICE CARD

Personal and Business Software

The range of software packages for personal applications being shown at CES was staggering, and yet those packages are only a small fraction of the total number available. Obviously, at a show like CES, the majority of packages were aimed at true home computers and not business machines occasionally pressed into personal use.

Packages for the Commodore 64 outnumbered all others together. However, there were many for Atari, Apple, IBM, and some other computers too. While many of these packages are intended for personal use, it seems that some would be suitable for a small business as well. Conversely, some of the packages aimed at the business user might well have a place in the home.

Sundex Personal Financial Management Software

Sundex demonstrated three personal financial management packages for the IBM PC, PCjr, Apple, TI Professional, and Commodore 64 computers. The simplest program, *Personal Payables*, is a bill paying package that handles multiple bank acounts and will print checks with addresses for window envelopes.

The second program, *Certified Personal Accountant*, also handles bill paying and includes net worth, budget, cash flow, and tax computations, money market and credit card accounts, and a simple stock portfolio.

Certified Personal Investor will track

the return on stocks, long and short term gains and losses, dividends, commissions, current market value, and tax position, and automatically produce information for income tax returns. It will also monitor other selected stocks that may be of interest.

The Sundex programs are very user-friendly and have both a "help" key and a "teach" function incorporated. In addition, the three programs are integrated and information entered in one can be automatically transferred to another.

Sundex Software Corp., 3000 Pearl St., Boulder, CO 80301. (303) 440-3600.

CIRCLE 444 ON READER SERVICE CARD

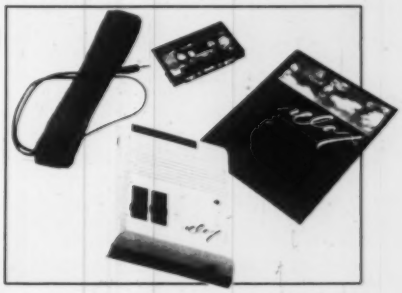
Synapse Home Business and Health Care Software

Synapse introduced a set of seven home business packages for filing, calculating, graphing, stock analysis, telecommunications, appointment management, and tax preparation. All seven packages share and exchange data with each other and run on Atari 400/800/XL series computers.

SynFile is a comprehensive database management and report generator program; *SynCalc* is a menu-driven spreadsheet with many extended functions and complete compatibility with *VisiCalc*; *SynTrend* offers comprehensive graphing, charting, and forecasting; and *SynChron* is a personal time management program.

SynComm is a fine-scrolling communictions package for use with any modem and timesharing service; *SynStock* is a complete stock charting and analysis program; and *SynTax* is an easy-to-use program to make dealing with Uncle Sam easier.

In a dramatic departure from its games and personal software, Synapse announced a new product division to market healthware titles. The first in the series is *Relax*, a stress reduction system.



It includes a sensor headband to monitor muscle tension (shown in graphical form on the screen), a workbook to help you understand your reactions to stress, and an audio tape to guide you into deep relaxation. *Relax* is available for Atari, Commodore, Apple, and IBM computers.

Synapse Software, 5221 Central Ave., Richmond, CA 94804. (415) 527-7751.

CIRCLE 445 ON READER SERVICE CARD

Financial Management and Spreadsheet Packages from HesWare

Human Engineered Software, introduced *Finance Manager* for the IBM PC, PCjr, Apple, and Commodore 64. This package allows users to track income and expenses, build a budget and compare it with actual results, balance multiple checking accounts, pay bills, print checks, and maintain tax records. Going a step beyond other available packages, *Finance Manager* has a wildcard search capability for access to specific transactions and can make financial calculations and print an amortization schedule.

Winter CES, continued...

Through a licensing agreement with Microsoft, HesWare is marketing *Multiplan* for the Commodore 64. The program contains all of the advanced *Multiplan* features including built-in arithmetic, financial, and trig functions; screen windows; variable column widths; alphabetic and numeric sorting; the capability to link worksheets; and flexible formatting of screen displays and reports. Price is just $99.95.

Hesware will also market *OmniWriter,* a page-based word processing program for the Commodore 64. Features include multi-line headers and footers, mail merge, underline and boldface, scrolling capabilities and function keys to page forward and backward, global search and replace, and support of a wide variety of printers. The word processor is compatible with *OmniSpeller,* a 30,000-word spelling checker and *Multiplan.* It sells for $69.95.

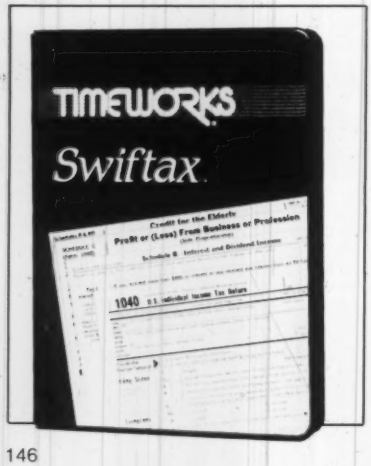
Human Engineered Software, 150 North Hill Dr., Brisbane, CA 94005. (415) 468-4111.

CIRCLE 446 ON READER SERVICE CARD

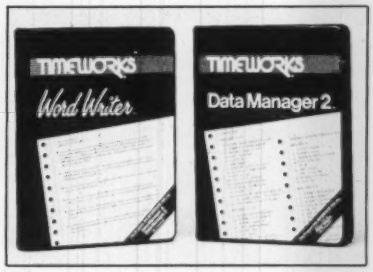
Database, Tax, and Money Management Packages from Timeworks

Timeworks announced seven packages for the IBM PC and Commodore 64. *Programming Kit 3* was created to introduce C64 owners to the concepts of database design. It allows for information entry and retrieval and can be used for anything from a date reminder to a mail list.

Also for the C64 is *Swiftax,* a comprehensive, menu-driven tax preparation package. It sets up a taxpayer file which allows changes at a later date, checks tax alternatives automatically, including income averaging, and prints tax information directly on each IRS schedule. Price is $49.95.



The four packages for the IBM PC include *Money Manager,* a budget and cash flow system which produces bar charts of budgeted and actual amounts; *Electronic Checkbook,* a check recording, sorting, and balancing system; *Data Manager 2,* a menu-driven generalized database system with statistical calculations included; and *Wall Street,* a competitive game of financial speculation based on realistic models for one to four players. Prices range from $39.95 to $89.95.



Word Writer, also for the 64, is a word processing program which features the ability to move blocks of text, automatic search and replace, insertion, deletion, indentation, automatic word wrap, 14 tabs, automatic page numbering, document chaining, form letter printout, highlighting, merging, page skipping, horizontal and vertical scrolling, color control, disk cataloguing, resetting, and centering. Suggested price is $59.95.

Timeworks, Inc., P.O. Box 321, Deerfield, IL 60015. (312) 291-9200.

CIRCLE 447 ON READER SERVICE CARD

Ten Insta Series Software Packages for C64

Micro-Sci, makers of those excellent replacement Apple disk drives, have embarked on a new venture: marketing the Cimarron Insta series of ten software packages for the Commodore 64.

Insta-Writer is a cartridge-based word processing system to create, edit, store, and print documents. It has an easy-to-use manual and many help screens. It can be integrated with *Insta-Mail,* a mailing list manager, or *Insta-File,* a versatile database management program. All three programs are available together in one package called the *Management Combo.*

Insta-Calc is a cartridge-based spreadsheet program. Partial spreadsheets can be moved and overlayed into other spreadsheets and help screens are available throughout. *Insta-Calc* interacts with *Insta-Graph,* a bar and line graphing package, and *Insta-Vestor,* a program for recording stock trades and prices. These three packages are sold together as the *Investment Combo.*

The last four programs include *Insta-Sched,* a time management program; *Insta-Key,* a keyed file access system; *Insta-Speed,* a Basic compiler; and *Insta-Music,* a learning tool for mastering music composition. Prices of the packages range from $31.95 to $99.95.

Micro-Sci Marketing, 2150 Hathaway St., Santa Ana, CA 92705. (714) 662-2801.

CIRCLE 448 ON READER SERVICE CARD

Spreadsheet, Database, and Diagnostics from CSA

From Computer Software Associates comes a program different from any other we have seen. Called *64 Doctor,* this disk or tape allows a user to diagnose C64 hardware malfunctions including the keyboard, audio, video, joysticks, RS-232 port, disk drive, printer, RAM, and cassette player. Only $29.95.

PractiFile is a versatile database package for the C64 which allows batch entry of data, multiple lines per record, alphabetic and numeric sorting, calculated entries, and multiple reports. Bar graphs can be generated to illustrate numeric data. Price is $55.

For Apple and C64 owners, CSA offers *PractiCalc II,* an advanced spreadsheet program with variable column widths, long labels, alpha and numeric sorting, and an on-screen default menu. Moreover, it is considerably faster than many other spreadsheets, and costs just $69.

CSA Software is distributed by Micro Software International, The Silk Mill, 44 Oak St., Newton Upper Falls, MA 02164. (617) 527-7510.

CIRCLE 449 ON READER SERVICE CARD

Softsync Personal Accounting Package for Many Computers

Softsync has released *Personal Accountant* for Commodore, Atari, Coleco, and Timex computers with promised availability for the IBM PC and PCjr.

The program uses double-entry bookkeeping which allows the user to make single entries that are posted to their proper categories and added or subtracted from the appropriate ac-

counts. This comprehensive program provides professional accounting reports which list assets and liabilities, income, expenses, and trial balances. An integrated database accesses names, addresses, and other related information while an amortization section calculates principal and interest payments and calculates future values for any compounding period. The program is said to have more features and be faster than many of its competitors.

Softsync, Inc., 14 East 34th St., New York, NY 10016. (212) 685-2080.

CIRCLE 450 ON READER SERVICE CARD

Accounting, Tutorial, and Graphing Programs from TriMicro

International TriMicro announced an extensive line of programs for the Commodore 64, a key one of which, *3 Plus 1*, will be available on a chip incorporated in the new Commodore computers. This package is an integrated window system which includes a spreadsheet, word processing program, and database manager.

Available directly from TriMicro are *Tri Count* ($149.95), an accounting package with modules for general ledger, accounts receivable, accounts payable, and inventory; *Tri Forth 1.0* ($59.95), a Forth language package; *Scriptimus* ($39.95), a comprehensive, menu-driven text editor; *Your Filing Cabinet* ($39.95), a database system; *Your Personal Accountant* ($39.95), a budgeting/expenditures package; *Tri Graph* ($29.95), a graphing and freehand drawing system; and *Easy Tutor* ($24.95), a ten-lesson tutorial in the Basic language.

International Tri Micro, 1055 N. Batavia Unit G, Orange, CA 92667. (714) 771-4038.

CIRCLE 451 ON READER SERVICE CARD

Bank Street Writer for IBM PC

Broderbund introduced an enhanced version of *Bank Street Writer* for the IBM PC. The enhanced version includes full tab features, including normal and decimal tabs; center, indent, and new page commands; and full control over margins, line spacing, text placement and placement and format of headers, footers and page numbers. It supports boldface, underlining, and other printer formatting commands and allows the user to define the function keys. *Bank Street Writer* supports all standard printers and all monitors, including monochrome, color composite video, and RGB. It is compatible with Compaq and IBM PCjr computers and sells for $79.95. Versions of the program are also available for Commodore 64, Apple, and Atari.

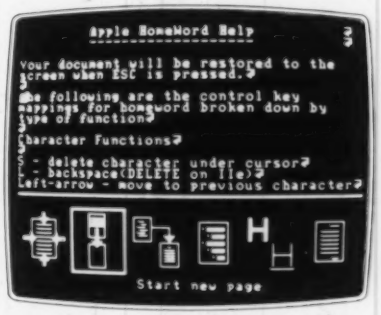
Also announced at the show was *Bank Street Speller*, a spelling checker designed specifically for use with *Bank Street Writer*. The program proofreads documents, highlighting misspellings in context, and allows the user to create a custom dictionary. It uses the same screen layout, control keys, menus, and prompts used by *Bank Street Writer*. *Bank Street Speller* is available for Apple at a price of $69.95.

Broderbund Software, 17 Paul Dr., San Rafael, CA 94903. (415) 479-1170.

CIRCLE 452 ON READER SERVICE CARD

Home Productivity Software from Sierra On-Line

Sierra On-Line announced an Atari version of *Homeword*, a home word processing program currently available for Apple and Commodore 64 computers. Also announced was a series of personal productivity packages compatible with and complementary to *Homeword*.


Apple HomeWord Help
Your document will be restored to the screen when ESC is pressed.
The following are the control key mappings for homeword broken down by type of functions
Character Functions
- delete character under cursor
- backspace(DELETE on IIe)
Left-arrow - move to previous character
Start new page

Homeword Speller, an integrated program to check spelling, features the same icon technology found in *Homeword*. It contains 28,000 words and has the capability of adding 2500 additional words of the user's choice. The program is available for Apple at $39.95. Commodore 64 and Atari versions will be released later in the year. *Homeword* and *Homeword Speller* packaged together will sell for $99.95.

Homeword Filer is a database program for use with *Homeword*. Apple, Atari, and Commodore 64 versions will be released later this year. *Homeword Finance* and *Homeword Tax* will be available in late 1984 and 1985.

Sierra On-Line, Inc., Sierra On-Line Building, Coarsegold, CA 93614. (209) 683-6858.

CIRCLE 453 ON READER SERVICE CARD

Audio Instruction about Computers from FlipTrack

FlipTrack Learning Systems were showing their widely-acclaimed audio cassette training packages at CES. Lee McFadden, president of FlipTrack, explained to us how audio cassette based learning gets users off to a fast, satisfied start. He feels it is like sitting down and listening to a knowledgeable friend. The positive reviews in many magazines seem to back up this assessment of the process.

HOW TO OPERATE THE FRANKLIN
HOW TO CHOOSE THE RIGHT COMPUTER & SOFTWARE
HOW TO OPERATE YOUR COMPUTER
HOW TO USE MULTI-PLAN
HOW TO USE EASY-WRITER II
HOW TO OPERATE THE IBM XT
HOW TO USE LOTUS 1-2-3

You can find a FlipTrack course for practically any computer or major software package. For example, courses are available on How to Operate the Apple IIe, II Plus, III, IBM PC, XT, and Franklin Ace 1000. Courses for using software packages are available for *WordStar*, *MailMerge*, *AppleWriter*, *EasyWriter II*, *VisiCalc*, *SuperCalc*, *Multiplan*, and *Lotus 1-2-3*. There are courses on two operating systems: CP/M and CP/M-86.

Each course contains two, three, or four audio cassettes of about two hours each. They are accompanied by a fully-indexed operator's guide and packaged in a vinyl binder. Prices range from $57 to $110.

FlipTrack Learning Systems, 999 Main, Suite 200, Glen Ellyn, IL 60137. (312) 790-1117.

CIRCLE 454 ON READER SERVICE CARD

Audio Training, Health, and Business Packages from K-Tek

K-Tek was showing two packages to help users make better use of their computers. *Computer Coach* has a floppy disk, audio cassette, and instruction booklet that teaches about periperhals, modum (sic), CPU, ROM,

RAM, and other terms. *Keyboard Coach* focuses on the keyboard including graphics and special keys. Available for C64, Atari, and Vic 20.

K-Tek had eight other packges including *Option Analysis* for analyzing hedges, puts, calls, and other options; *Health & Diet* to define ideal body weight and count calories; *Fact Finder,* a file management system; and *Business Field Analysis* for travelling salespeople. Available for Apple, Atari, and Commodore 64.

K-Tel Software, Inc., 11311 K-Tel Dr., Minnetonka, MN 55343. (612) 932-4004.

CIRCLE 455 ON READER SERICE CARD

Phi Beta Filer from the Scarborough System

Phi Beta Filer is said to be the first list management software program designed for home use by both children and adults. It uses both color and sound, sorts and prints alphabetically and numerically, and it has a "Quiz Master" mode which can be used for developing games or for help in studying for exams.

The system comes on two disks, but may be used on a one-drive system. The data disk is pre-loaded with forms for listing credit cards, home inventories, cataloging collections, maintaining sports records, scheduling car maintenance, managing paper routes, and recording important dates. Available for Apple; C64 and IBM PC versions will be out shortly. Price is $49.95.

Scarborough Systems, Inc., 25 North Broadway, Tarrytown, NY 10591. (914) 332-4545.

CIRCLE 456 ON READER SERVICE CARD

Accounting, Inventory, and Utility Software from Southern Solutions

Southern Solutions has long been producing high-quality accounting packages for Commodore Pet, CBM, and "B" series computers. Now, most of these packages have been adapted for the Commodore 64 and many new utility packages developed.

Newest entry in the C64 accounting series is *The WidgetTracker,* an inventory program that supports purchases, orders, sales, and credit memos. It can generate many reports including sales analysis, price list, file list, low quantity, and on order.

The Accounting Four Pack for the C64 includes general ledger, accounts receivable, accounts payable, and payroll modules in a single binder for $349.95.

Five home utility programs have also been packaged together at a reduced price ($49.95). They include *Letterhead* which prints any kind of letterhead; *Memo Pad,* a message center; *Little Invoice* which creates invoices for a small business; *Painting Helper* which calculates the paint needed for a job; and *Grocery List.*

Southern Solutions also plans to release Dr. Daley's Software Library, a collection of 50 miscellaneous programs, for the C64. For years it has been a popular package for the Pet.

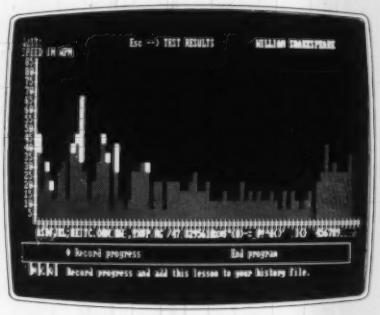
Southern Solutions, P.O. Box P, McKinney, TX 75069. (214) 542-0278.

CIRCLE 457 ON READER SERVICE CARD

Typing Tutor from Simon And Schuster

The Typing Tutor III program continually monitors and records the precise time that it takes for the user to respond to each key. These data are then used to customize current and future lessons to meet the specific needs of the user.

This time response monitoring approach was used in the original *Typing Tutor* program from Kriya Systems in


Esc --) TEST RESULTS
WILLIAM SHAKESPEARE
0 Record progress
End program
Record progress and add this lesson to your history file.

1979; however, this new version is written in Forth for faster and more accurate response as well as easier transportability to many different computers.

Simon and Schuster Electronic Publishing, 1230 Avenue of the Americas, New York, NY 10020. (212) 245-6400.

Typing Game and Utility Programs from Quick Brown Fox

QuickFinger, a touch-typing game designed to improve keyboard skills, has been developed by Quick Brown Fox for the Commodore 64. The disk contains three games: Alphazap, a game with a mission to destroy letters that threaten a pedestrian; Link the Letters, an eight-level vocabulary game; and Keyboard Pacer, a game which requires increasing speed in typing. $37.50.

Quick Brown Fox has augmented its original word processing program with several additional entries including: *ExpandaFox,* a software modification for displaying 80 columns; *QuickMail,* a mailing list/merge program; and *QuickLink,* a smart terminal telecommunications program for use with any modem.

Other programs from QBF include *QuickFix,* a 6502 assembly language debugger for the C64, Apple, and Atari; and *Quick Basic Aid* for the C64 which offers renumbering, a cross reference of variables and line numbers, and the ability to extract routines from one program and use them in another.

Quick Brown Fox, 536 Broadway, New York, NY 10012. (212) 925-8290.

CIRCLE 458 ON READER SERVICE CARD

Gladstone Home and Business Management Software

Gladstone announced three new packages for Commodore 64 and Vic 20 computers. All are priced below $30.00.

Real Estate Management is a menu-driven program that allows a user to compare, revise, and analyze actual and budgeted income and expenses for an apartment building or personal residence.

Personal Money Management is a menu-driven program that allows a user to compare, revise, and analyze actual and budgeted income and expenses for an apartment building or personal residence.

Personal Money Management is a group of seven programs ranging from a checkbook record system to a point and figure charting program for investments.

Calc Pro is a spreadsheet package which includes, as a bonus, a statistical analysis package.

Gladstone Electronics, Inc., 1585 Kenmore Ave., Buffalo, NY 14217. (716) 874-5510.

CIRCLE 459 ON READER SERVICE CARD

Computerized Slide Show for IBM PC from Prentice-Hall

Prentice-Hall was showing *ExecuVision,* a presentation graphics program for the IBM PC. This menu-driven package lets you create graphics and picture images, copy parts of slides, copy and move objects, combine multiple slides, superimpose images, alter foreground and background colors, and even use animation. Up to 100 slides can be stored on a single disk. The package is also compatible with *VisiTrend* and *VisiPlot.*

Prentice-Hall Inc., 200 Old Tappan Rd., Old Tappan, NJ 07675. (800) 345-8112.

CIRCLE 460 ON READER SERVICE CARD

Program Writing Aid from Dynatech

Dynatech was showing a series of CodeWriter programs that helps you create your own programs. CodeWriter is said to look at a problem the same

Looks like a Ferrari. Drives like a Rolls. Parks like a Beetle.

Ask your computer dealer to take the cover off a world-class disk drive.

The all new, 1984 Indus GT.™

The most advanced, most handsome disk drive in the world.

A flick of its power switch can turn an Atari into a Ferrari.

Or an Apple into a Red Hot Apple.

Looks like a Ferrari.

The Indus GT is only 2.65" high. But under its front-loading front end is slimline engineering with a distinctive European-Gran flair.

Touch its LED-lit CommandPost™ function control AccuTouch™ buttons. Marvel at how responsive it makes every Atari or Apple home computer.

Drives like a Rolls.

Nestled into its soundproofed chassis is the quietest and most powerful disk drive power system money can buy. At top speed, it's virtually unhearable. Whisper quiet.

Flat out, the GT will drive your Atari track-to-track 0-39 in less than one second. Increasing data transfer 400%. (Faster than any other drive. And as fast as any Apple disk drive.)

And each GT comes with the exclusive *GT DrivingSystem*™ of software programs.* World-class word processing is a breeze with the *GT.Estate WordProcessor.*™ And your dealer will describe the two additional programs that allow GT owners to accelerate their computer driving skills. *Included as standard equipment.

Also, the 1984 Indus GT is covered with the *GT PortaCase.*™ A stylish case that conveniently doubles as a 80-disk storage file.

Parks like a Beetle.

The GT's small, sleek, condensed size makes it easy to park.

And its low price makes it easy to buy.

$449 for Atari. $329 for Apple.

So see and test drive the incredible new 1984 Indus GT at your nearest computer dealer soon.

The drive will be well worth it.

INDUS™

The all-new 1984 Indus GT Disk Drive.

The most advanced, most handsome disk drive in the world.

For dealer information, call 1-800-33-INDUS. In California, 1-800-54-INDUS, 213/882-9600.

© 1983 Indus Systems, 9304 Deering Avenue, Chatsworth, CA 91311. The Indus GT is a product of Indus Systems. Atari is a registered trademark of Atari, Inc. Apple is a registered trademark of Apple Computer, Inc.

CIRCLE 149 ON READER SERVICE CARD

way you look at it without computer jargon or high level match, and then handle much of the actual coding.

Five packages are available for Apple, C64, Atari, and PCjr. They include *Home FileWriter* for writing a database manager; *FileWriter 2*, an advanced database system; *Dialog* for creating inactive quizzes and stories; *Adventure Writer* for creating adventure games; and *The ELF System* (Easy Language Form) for writing programs to do personal calculations.

Dynatech, 7847 N. Caldwell Ave., Niles, IL 60648. (312) 470-0700.

CIRCLE 461 ON READER SERVICE CARD

Green Arrow Data Management System

Green Arrow is a data management system for the Commodore 64. It comes with a built-in mailing list and label printing format, appointment calendar, recipe box, and tutorial instructions to help you design your own formats. The package is menu-driven and has high-speed browsing through the records. A record may contain up to 1600 characters, and up to 1000 records can be stored on a disk. The system permits you to sort and select on any field within a record.

Softwave, 156 Drakes Ln., Summertown, TN 38483. (615) 964-3573.

CIRCLE 462 ON READER SERVICE CARD

T&F Releases Checkbook and Property Management Packages

CheckEase! from T&F is a program which maintains multiple checking accounts with full reconciliation. Reports can be printed by check number, budget category, or tax category. Checks can be voided or unvoided, and data are compatible with Commodore's *Personal Finance* package. For the C64, Vic 20, and Atari; $20.97 on disk.

P.M.P. 2000 is a property management template for *VisiCalc* which provides an apartment status report, tenant status report, cash receipts worksheet, invoicing, distribution of expenses, bank account statements, and income/expense schedules. For Apple, IBM, and Atari; $131.97.

T&F Software Co., 16742 Stagg St., Suite 106, Van Nuys, CA 91406. (818) 901-8941.

CIRCLE 463 ON READER SERVICE CARD

Electronic Software Distribution

Xante

Xante (pronounced Zahn-tay) Corp. announced an innovative way to deliver software electronically. Basically, a retailer buys (or leases) a Production Station ($15,000). When a customer wants to buy a software package, the store calls a central computer, pops a blank cartridge or disk (the right type, of course) into a slot on the Production Station, and a few minutes later, out comes a finished cartridge or disk. A narrow printer produces a label for both the cartridge and outside package while a second printer runs off the program instructions. If desired, up to 900 finished titles can be displayed in a snazzy display rack included with the Production Station.

The system has been on test in Tulsa, and has been well-received. The big advantage of the system is that stores can offer a wide selection of software titles, both new and old, without having to stock a huge inventory. In addition, stores will be able to carry software for all computers, not just two or three.

For more information, contact Dick Yocham, Xante Corp., 6846 South Canton, Tulsa, OK 74136. (918) 492-4089.

Cumma

Remember Nolan Bushnell, the founder of Atari? His name seems to keep cropping up in new ventures. Three years ago, it was the Chuck E. Cheese Pizza Time Theaters; last year, it was Androbot; and today it is Cumma, an electronic software distribution scheme.

Amiga Lorraine:

Finally, the "Next Generation Atari"?

John J. Anderson

As the 1984 Winter CES drew to a close, people began to ask me, "Well, what was the hit of the show?"

Hard to say. Overall, the show was short on blockbusters, at least in the realm of microcomputers. Commodore introduced its new machine, the 264 (see the related sidebar and "Commodore's Port" for more information on this development). Atari and Apple were playing their cards close to the vest, and had little to report this time around. New software was in abundance, but with the possible exception of Relax from Synapse (about which you will read more in an upcoming issue), nothing really knocked me off my feet.

If there was a "hit" of the show for me, it had to be my first glimpse of the supermicro code-named Lorraine by Amiga. There was no hint of the machine anywhere in evidence at the Amiga booth. But, with an invitation to step behind the secret panel, my jaw finally got a chance to drop. As far as I'm concerned, the Lorraine demo was reason enough to have made the trip to Las Vegas.

Yes, Amiga. The people who brought you the Joyboard—a foot-controlled joystick. Hard for me to believe too. To hear it from Dave Morse, president of Amiga, the joysticks and peripheral accessory products we have seen from the company up until now have served well to bankroll the Lorraine—the *real* project front and center on the drawing board.

About six months ago, Dave stopped by the lab to describe Lorraine to us. We were excited, but have heard terrific pitches before. We wished him the very best, posted our own suggestions, and told him to keep in touch.

Well, in the secret room in the center of West Hall, he made good on his promises. What we saw of Lorraine was provided by a landscape of breadboards —PROMs to be in hand by April or May. The software boys, easily identifiable by their well-worn Adidas and gleeful smiles, had spent a little over a week devising demos for Lorraine, further hampered by a diskless I/O system. They still managed in a series of short programs to convey enough of Lorraine's powers to floor me.

Amazing Graphics And Sound

I promised Dave not to say very much about Lorraine. Suffice for now to say it is the most amazing graphics and sound

Unlike Xante, the Cumma MetaCart terminal is owned by the corporation; the retailer simply provides space in the store. Up to 200 programs are stored in the machine, and a new cartridge can be burned in a matter of seconds. To operate the MetaCart, the customer buys a blank cartridge, inserts it in the machine with some $5 bills (usually three), and that's it.

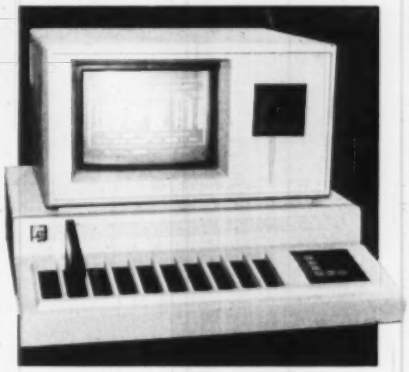
Cumma Technology Corp., 1105 Fair Oaks Ave., Sunnyvale, CA 94089.

Romox

A third entrant in the electronic software distribution sweepstakes is Romox, also headed up by an industry old-timer, Paul Terrell. The Romox point of sale terminal has an IBM PC built in with a 10 Mbyte hard disk drive able to store up to 500 titles. The Romox system uses an EPROM cartridge (erasable with a UV light unit in the back of the terminal).

At the moment, Romox is the only system that can make cartridges for the PCjr. Also unique to the Romox system is an "attract mode" that shows customers the play of the game at the time of purchase.

Documentation for all the programs on the system is contained in a fat book (free with the first cartridge) that doubles as a catalog. The company has been testing consumer response in drug stores, mass merchandisers, and record stores in northern California; the reception to it has been excellent.



Romox, Inc., 476 Vandell Way, Campbell, CA 95008. (408) 374-7200.

Rom-Labs

Rom-Labs was also showing an electronic software distribution system. Like the Xante system, programs are downloaded from a central computer onto an EEPROM (electronically erasable) cartridge. The ROM-Loader is built around an IBM PC and takes about 40 seconds to erase and reload a cartridge. The big difference between other systems and the one from Rom-Labs is that it can be purchased directly by end users. The price, without computer, is projected to be about $100.

Rom-Labs Inc., 2643 151st Pl. N.E., Redmond, WA 98052. (206) 881-7144.

And the Winner is . . . .

In the electronic distribution field, there is a fifth entrant, Softyme, about which we have no information. Who is (or will be) the winner? One answer is that you, the consumer, will be. After all, anything that can make more titles available on a widespread basis is good for the end user. But of the companies involved, who is likely to come out on top?

Let's consider some of the pros and

machine that will ever have been offered to the consumer market. Just what kind of technical foundation does Amiga have? Well the VLSI chip set was designed by Jay Minor, the man who designed the super chip set of the original Atari machines.

Although the Lorraine will sport an NTSC output, to get the best of it you will want an RGB monitor. Lorraine is capable of providing multi-color real-time animated images on a par with (and probably superior to) Saturday morning cartoons. Its four-voice, stereo sound output is designed to go directly into your existing sound system, and can pump out sound comparable to a dedicated synthesizer, as well as sound effects and intoned speech.

Lorraine is small, handsome, and has a keyboard much like that of the TI Professional—in a word, delicious. It will incorporate, in addition to a ROM cartridge slot, a high-density 5¼" disk drive and will sport 128K of RAM. And it is fast—really fast. That is what makes Lorraine's bit-mapped and sprite animation absolutely the most powerful I have ever seen for a home system.

Although Mr. Morse will not state flat out what processor the Lorraine is based upon, it is fair to guess from the demos that it is no less than a 68000. The Lorraine can support all 16-bit operating systems and will cost less than a fully-configured IBM PCjr.

PCjr Compatible?

I have tried to emphasize to Amiga, to the very best of my ability, how important it is that the basic Lorraine system be PCjr compatible. In terms of marketing a hybrid machine, it is of paramount importance to be able to say "yes, it runs *everything* that will run on the jr. *And,* running software specially designed for it, it does all these incredibly fantastic things, too."

As it stands, IBM-compatibility will require an add-on processor ROM cartridge. If Amiga is smart, they will build that circuitry into the production model Lorraine. Then they will have out-of-the-box compatibility. For, regardless of the fact that the IBM standard is a decidedly mediocre one, the jr. is bound to become the home standard. I am skittish about computers with "special capabilities," no matter how impressive those capabilities may be. We have watched powerful machines (e.g., the Atari) go by the wayside *despite* their impressive powers. Amiga, please don't join the sorrowful ranks that have wasted technological superiority through marketing muck-ups.

Amiga is also like Atari in another respect—it must overcome its current reputation before it can be taken seriously. Okay, fellas. Let's put the Joyboard behind us and get credible. The Lorraine just may be the machine that hundreds of thousands of graphics and sound enthusiasts have been waiting for since the introduction of the Atari. With jr-compatibility and the right marketing, the Amiga Lorraine may turn out to be the big success story of the mid-1980s.

I, for one, would be extremely pleased at such a turn of events. I can see the *Creative Computing* monthly column now: Starship Amiga. Let's keep our fingers crossed!

cons of each system.

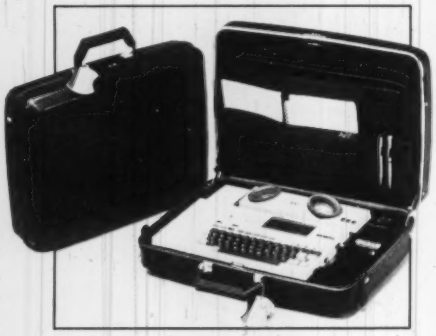
- Cost to customer. Romox and Rom-Labs are the winners because cartridges can be reused.
- Image. Cumma, Xante, and Romox all had large 1000 plus sq. ft. booths at CES; Rom-Labs had 100 sq. ft. Cumma had slick brochures, Xante had an impressive reception. When you are trying to sign up dealers, all these things count.
- Selection. Xante and Rom-Labs use a central computer with virtually unlimited capacity; Cumma and Romox are limited to what will fit into a stand-alone unit.
- Formats. Xante is the only one that can produce computer disks as well as cartridges.
- Packaging. Lots of hype, but no good solutions. Perhaps Xante's hinged display racks are the best.
- Demonstration. Romox is the only system that promises software demos in color.

We could go on, but it is unlikely that a clear winner would emerge. If we had to rank the contenders today, we would probably put them in this order: Xante, Romox, Cumma, Rom-Labs. But in the long run, only the free marketplace will decide whether there will be one winner, or whether four (or more) systems will compete side by side.

Robots and Miscellaneous

Computer Carrying Cases

In response to the burgeoning personal/portable computer market, American Tourister introduced a special line of nine hard-sided computer carrying cases. They are available for the following: IBM PC, Epson HX-20, Epson FX-80 printer, Sharp PC-5000, Apple II, NEC 8201, Frankin Ace 1000,



Xerox 1810, and Workslate. Each case has a sturdy ABS shell and custom foam interior.

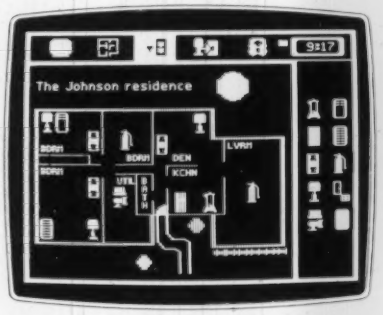
American Tourister, 91 Main St., Warren RI 02885.

CIRCLE 464 ON READER SERVICE CARD

CyberLynx Home Control System

CyberLynx was showing *Smarthome I*, a system which allows an Apple or IBM PC to monitor a security system and control electrical appliances without tying up the machine. The *Smarthome I* package comes with a controller unit, wireless security sensors, handheld remote controller, powerline appliance controllers, and disk of software.

Key to the *Smarthome* system is the



software which lets the homeowner use a joystick or mouse to move objects (icons) around the screen. The system includes a program to allow the user to draw and customize his own house or building. The starter package sells for $600.

CyberLynx, 4828 Sterling Dr., Boulder, CO 80301. (303) 444-7733.

CIRCLE 465 ON READER SERVICE CARD

Computer Care Products from Recoton

Many audio and video accessory vendors are entering the computer care and accessory field, once the exclusive domain of a small handful of companies. One of the biggest to make the leap is Recoton with a wide variety of products.

Their products include printer, monitor, modem, and cassette cables; AC adapters; power strips; surge protectors; and computer covers. In the maintenance area, they offer cleaning kits for disk drives, keyboards, screens, and cassette recorders. In media, they offer disks, cassettes, and storage boxes. We checked a few prices and found them very competitive, especially for cables which computer manufacturers tend to price on the high side.

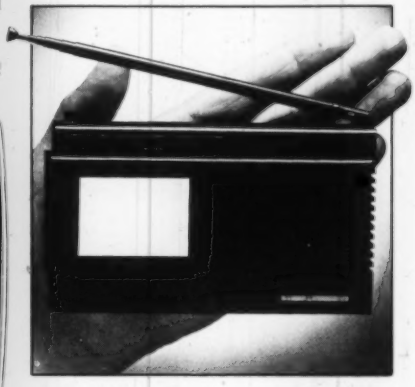
Recoton Corp., 46-23 Crane St., Long Island City, NY 11101. (212) 392-6442.

CIRCLE 466 ON READER SERVICE CARD

Small Screen Teevees

Two years ago, the rage at CES was battery-powered 5″ TV sets. Since we are not addicted to TV viewing (except when attached to a computer), we never got one of these little wonders. (Frankly, we thought the screen on the Osborne O1 was better suited to an elf than a full-size human, so now you know where our biases lie).

In any event, this was the year of the micro TV set. Casio and Citizen had sets with LCD displays which are viewed through a magnifying mirror, and Sinclair showed a unit with a 2″ screen



(magnifier available) using a bent-neck picture gun. It is the smallest of the three (5.5″ x 3.5″ x 1.25″) and is the only one to incorporate both of the worldwide TV standards (NTSC, PAL). But does it have the resolution to view text from a computer (say the Sinclair Spectrum)? We can't be sure until we get one, but we would guess not. What say you, Clive?

Sinclair Research, 50 Staniford St., Boston, MA 02114. (617) 742-4826.

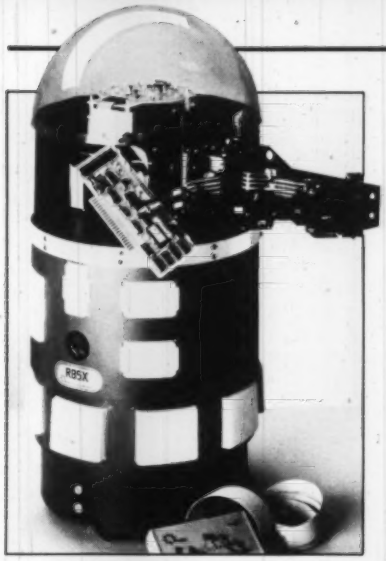
CIRCLE 467 ON READER SERVICE CARD

RB Robot Enhancements

You've read all about the RB robots on these pages. Now the company has released four preprogrammed software modules for the RB5X Robot. Owners can either program the robot themselves using a computer or use the modules.

As you will recall, the RB5X comes completely assembled with Polaroid rangefinder sonar, tactile sensors, battery charger, and several options including a multi-function arm.

The four software packages include Pattern Programmer (allows the robot to remember a sequence of instructions), Bumper Music (use the robot bumpers like piano keys), Spin-the-Robot (a game module for children that lets them get RB dizzy), and Intruder Alarm/"Daisy, Daisy." When we first heard of this last package we wondered if when the robot sensed an intruder it was programmed to



sing "Daisy." Not quite, but close—it sounds an alarm, and a separate command directs it to sing. We like RB5X—as if you couldn't tell—but we'd sure like to see a module to program him to do windows.

RB Robot Corp., 18301 West 10th Ave., Suite 310, Golden, CO 80401. (303) 279-5525.

CIRCLE 468 ON READER SERVICE CARD

Hubotics Robot

Hubotics introduced the Hubot, said to be the first robot intended for use in the home rather than by hobbyists or educators. Well, maybe, but we think hobbyists, educators, and homeowners will all like Hubot.

Hubot stands 44" tall and is more of a mobile computer than a robot. The computer, the SysCom, has three Z80A mpus, 128K of RAM, 42K of ROM, an 80-column by 24-line display, 64-key detachable keyboard, $5\frac{1}{4}$" disk drive, and ports for a parallel printer, RS-232 serial device, and joysticks. Robotic peripherals include a voice synthesizer (with 1200-word vocabulary), sonic transducer, battery charger, digital clock, and, of course, a C3PO garbage can-like body. Oh, yes, if he gets on your nerves, you can always switch off the robotic functions and turn him into a B&W TV set. $3495.

Hubotics, Inc., 5375 Avenida Encinas, Suite B, Carlsbad, CA 92008. (619) 438-9028.

CIRCLE 469 ON READER SERVICE CARD

Bit Banger

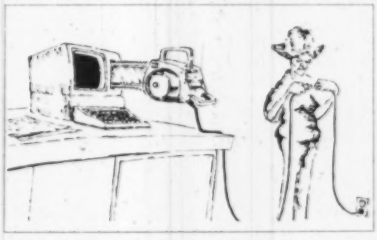
Are you frustrated by your computer? Did it just eat two weeks of programming effort? Do you have the urge to put your foot through the screen? This product may be the answer to your frustrations. Called a bit banger, it is a foam-headed mallet with a plastic tubular handle. We asked for one to bang away our stray bits but the manufacturer refused to give us one to test, so you'll have to be your own judge as to whether it is worth $14.95.

Bits & P.C.'s, 1850 Union St., San Francisco, CA 94123. (415) 929-7789.

CIRCLE 470 ON READER SERVICE CARD

I Hate Computers

Perhaps you hate your computer and you would like to threaten it with great bodily harm. Here are some ideas of how you can get even with your diabolical machine; they include turning it into a boat anchor, soccer ball, punching bag, or litter box. Even if you like your computer, these 76 diabolical ideas of John Barry's illustrated by Richard Tennant are sure to give you some quiet chuckles, if not loud guffaws. Published by Hayden Book Company, Rochelle Park, NJ, for only $4.95. EOE



WRITE YOUR OWN APPLE GAMES

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Getting Educated At CES

Betsy Staples

The Consumer Electronics Show has always been the province of game software. It was the game software manufacturers—Atari, Activision, Mattel—who first discovered the show and used it as a marketing vehicle. And as recently as last year's CES, they had the floor to themselves.

This year, however, there was another category of software every bit as ubiquitous as games: educational programs. The big names—Spinnaker, Electronic Arts, Scarborough, Scholastic, et al.—were all showing their educational wares in the West Hall from booths splashy and sophisticated enough to rival those of the large hardware manufacturers in the main convention center. Other newer and/or smaller companies had smaller, less pretentious booths, but at first glance the quality of the software on display seemed uniformly high. Perhaps the manufacturers have gotten the message that parents and teachers will no longer tolerate swillware.

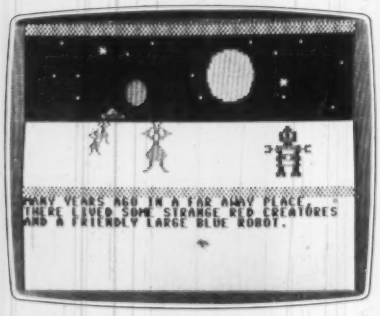
Of course, we did not have time to do a full scale, in-depth evaluation of any of the products we saw on the floor, so a mention in this report does not qualify as an endorsement, but the following summary should give you a good feel for the latest in educational software. We shall choose the best of the lot and publish full reviews in future issues of *Creative*.

For now, let's have a quick look at the packages that were introduced at the show. For more information on the ones that interest you, circle the appropriate number on the Reader Service card.

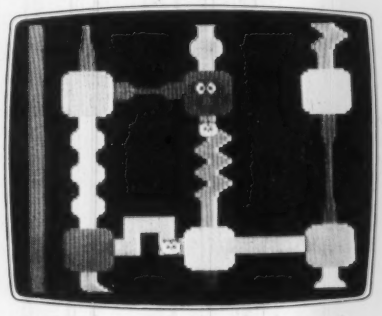
Spinnaker Software introduced six educational packages. Three of the new programs are from the Early Learning Series for children between the ages of 3 and 12. The first of these is *KidWriter*, a storytelling tool that allows children to create their own stories using both pictures and words. The program offers a menu of 99 characters that can be placed on a variety of background screens. It is available on disk for Apple and Commodore 64 for $34.95.

Designed for children ages 3 to 6, *Alf in the Color Caves* challenges the player to guide Alf through "zig-zaggy shapes" while attempting to evade the nasty "Wufflegumps" on his way through the color cave. The game is available on cartridge for the Commodore 64 for $39.95.

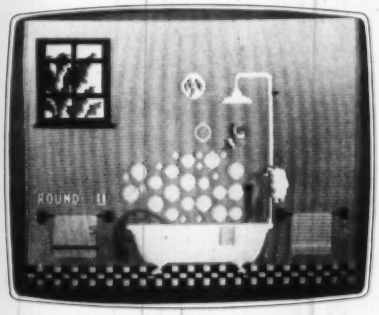
Bubble Burst features Soapie, a Sea Serpent who wants to finish her bath before a flock of Zeboingers, little birds



KidWriter from Spinnaker



Alf in the Color Caves from Spinnaker



Bubble Burst from Spinnaker

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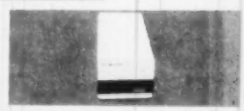

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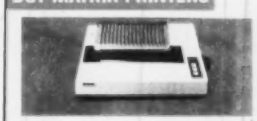

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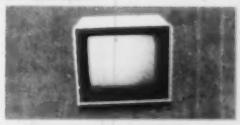

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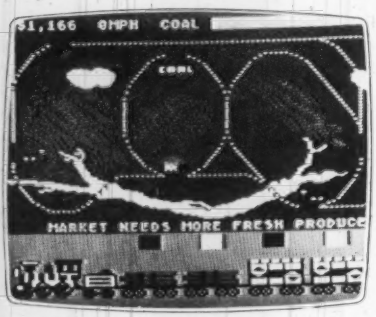
with sharp beaks, burst all her bubbles. Intended for children ages 4 to 8, Bubble Burst is available on cartridge for the Commodore 64 for $39.95.

Trains is an animated economics simulation which introduces players to the principles of running a business. Bills must be paid, priorities set, and deadlines met to stay in business and expand the railroad empire. The program is available on disk for Atari and Commodore 64 for $39.95.



Trains from Spinnaker

The remaining two introductions are *Jukebox* from the Family Learning Series and *Aerobics* from the Better Living Series.

Sierra On-Line added three programs to their line of educational software with *Wizard of Id's Touch Type*, *Story Maker*, and *Learning with Fuzzywomp*.

In *Wizard of Id's Touch Type*, the Wizard of Id fights off a dragon who throws words on the wall. Features of the game include sentence and paragraph typing, adjustable speed, and several different types of practice drills. It is available on disk for the Commodore 64 and on cartridge for the PCjr for $39.95.

Story Maker is a creative story construction kit which allows children to create their own stories, titles, characters, sentences, and illustrations. It is available for Commodore 64 and Apple for $39.95.

Learning with Fuzzywomp includes four games for pre-readers which teach such basic skills as pattern matching, counting, number sequencing, and creative play. No adult supervision is required to play this game, which is available for the Apple and sells for $29.95.

Two new educational packages were introduced by **Scarborough Systems**. Using *PatternMaker*, children and adults can construct, manipulate, and animate symmetrical patterns in color. The patterns created can be saved and printed, and the company suggests applications for artists, architects, and weavers.

Run for the Money by Tom Snyder is an educational business game which allows the player to have fun while learning how to operate a profitable business. The game encourages the development of business skills and replaces luck with strategy as the key to success. It is available for IBM PC ($49.95), Atari, and Apple ($39.95).

New to the **Electronic Arts** line are *D-Bug*, a computer literacy product designed to teach deduction and problem-solving techniques, and *Word Flyer*, a game designed to enhance reading, spelling, and vocabulary skills in five- to eight-year-olds. Both programs were developed by ChildWare.

Weekly Reader Family Software was showing the newest additions to their software family, *Stickybear Shapes*, *Stickybear Opposites*, and *Stickybear Basketbounce*, all reviewed elsewhere in this issue.

CBS Here To Stay

In an enormous booth in the main hall of the Convention Center **CBS Software** made it clear that they are in the educational software business to stay. They announced several agreements with independent software developers and debuted nine new educational programs. *Coco-Notes*, *Halftime Battling Bands*, and *Movie Musical Madness* are three music activity programs designed for ages 6 and up. All are available for Atari and Commodore 64 for prices ranging from $24.95 to $34.95.

From Joyce Hakansson Associates for CBS come *Ducks Ahoy*, which develops prediction and strategy development skills, and *Seashore Hide 'n' Seek*, which teaches shapes and color discrimination. Both programs are designed for preschool children and are available for Atari and Commodore 64. Prices range from $24.95 to $34.95.

Programs developed by Neosoft, Inc. make use of a colorful, game-specific keyboard overlay for Apple, Commodore 64, and IBM computers designed to serve as the program menu and interface. *Coast-to-Coast America* and *Dinosaur Dig* feature colorful, animated graphics which test mastery of facts by children aged 6 and up. The programs sell for $49.95 each with keyboard overlay.

Also announced was an agreement with Children's Television Workshop to convert selected Sesame Street programs, currently available only for the Radio Shack Color Computer, to other formats. *Big Bird's Special Delivery*, which addresses classification of objects and symbol recognition, and *Ernie's Magic Shapes*, which covers visual discrimination using shapes and color matching, are available for Atari, Commodore 64, and IBM PCjr. Prices range from $27.95 to $39.95. Other programs featuring the Sesame Street characters will be available later in the year.

A series of programs for Apple, IBM, Commodore 64, and Atari computers based on the television show Mister Rogers' Neighborhood will also be available later in the year.

Traveling back to the West Hall, we found that **Hesware**, too, had added a collection of licensed titles to its line. Through an agreement with Sunburst Education, Human Engineered Software will market *The Factory* and *M-ss-ng L-nks* for Commodore 64 and Atari computers, *The Pond* for Atari, and *Tri-Math* for Commodore 64.

The Factory places the player in the role of a creative design engineer with the job of creating geometric products on an assembly line. *M-ss-ng L-nks* is a language puzzle that offers to help children 10 years and older improve their writing, spelling, grammar, and comprehension skills. To help children ages 6 to 12 improve their basic math skills, *Tri-Math* uses an alien space invader, a dinosaur, and a mysterious mansion as a backdrop for practice in addition, subtraction, multiplication, and division. *The Pond* challenges children age 7 and up to learn pattern recognition.

Turtle Toyland Jr., a program developed by ChildWare Corporation, challenges children age 6 and up to learn about computers and computer concepts. It is available for the Commodore 64, IBM PC, and Coleco computers.

FlipTrack Learning Systems also announced products designed to help the

"...First the good news, ...we received a new floppy disc for our computer, ...the bad news, ...it's on diagramming sentences."

novice learn to use home computers. The company's Learning Express series of audio cassettes provides in-depth instruction for new users of Atari 600XL/800XL, IBM PCjr, Adam, and Timex-Sinclair 2068 computers. The

new tapes complement the previously introduced courses on *How To Operate The Commodore 64, Vic 20,* and *TI 99/4A* computers.

All Learning Express titles consist of one or two instructional audio cassettes and a Quick Reference Guide that summarizes the key ideas and procedures in each lesson. They are priced from $16.95 to $29.95.

Game Manufacturers Join The Education Market

Epyx has added *Fun With Words* and *9 to 5 Typing* to its Learning Fun line of educational software. *Fun with Words* features three different games, each with numerous skill levels and game variations to provide the appropriate degree of difficulty for each player. Players of *9 to 5 Typing* learn to type in play sequences from the movie "9 to 5."

Another previously game-oriented manufacturer, **MicroLab**, was showing educational software. On display at their booth were the new SAT preparation packages from the company's MicroLearn division.

No programs were on display, however, at the MicroLab hospitality suite, which wins this year's prize for Best Party. Held at Caesar's Palace in a lavish suite complete with mirrors on the ceiling, the Sunday night party was simply delightful. The food was good, the hosts were charming, and the atmosphere was relaxing—a combination I can't recall ever having found before at a CES party.

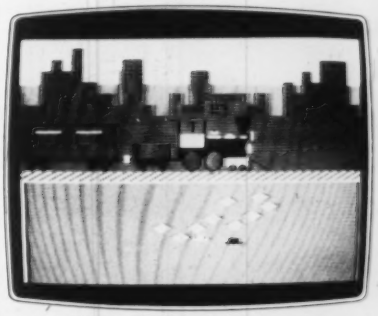
The Avalon Hill Game Company, long famous for war games, announced the formation of an educational division to be known as Intelligence Quest Software. The first new programs in the series are *Divex* and *ABC Caterpillar*. *Divex* challenges the child's grasp of multiplication and division as he defends his land from incorrect answers in the form of rocket ships. Intended for children ages 8 to 12, the game is available on disk for Atari ($21) and cassette for Atari and Commodore 64 ($16).

In *ABC Caterpillar* the three- to eight-year-old child drills alphabetical order by finding and gobbling up letters in sequence. It is currently available for Vic 20 and sells for $16.

Branching out from its previously all Timex-Sinclair line of software, **Softsync** introduced *Dancing Feats* for Commodore 64 and Atari computers. The program allows users to play music and "create radiant bursts of color" on the computer screen. Using a series of menus, the user can choose the bass, beat, style, tempo, and ending he desires. He then chooses a melody with the joystick.

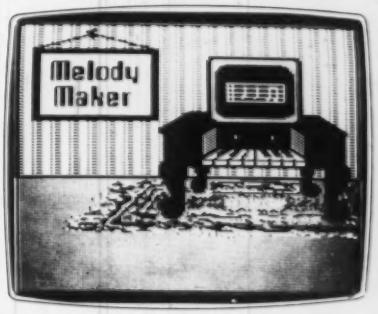
More Programs By Tom Snyder

Scholastic announced three new Wizware programs by Tom Snyder. Structured around the train stations of more than 100 U.S. cities, *Agent USA* is a strategy game that helps children learn geography as they become involved in a cross-country train chase to capture an evil character. *Spelldiver* is a program that uses the fantasy environment of an ocean floor to help children learn to visualize letters and words. The child assumes the role of a deep sea diver exploring underwater mystery words. *Bannercatch* is a five-level game of strategy and skill designed to help children learn to collaborate as they play against a team of clever robots. The opponent robots communicate with one another using a decodable binary language. All



Agent USA from Scholastic

Spelldiver from Scholastic



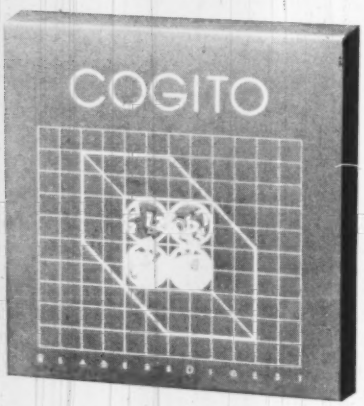
Melody Maker from Scholastic

three programs are available for Apple, Atari, Commodore 64, and IBM PCjr.

Story Tree for the Apple is designed to teach creative writing to children age 9 and up. The program is called a "story processor" through which children can write, edit, or change story lines. They can also use the program to create multiple story paths for the reader to follow, resulting in different endings to the story.

New from **Reader's Digest Software** are *Little People's Puzzles* for the Apple and Commodore 64. Featuring Nursery Rhyme and Things That Go themes, the two packages are basically computerized picture puzzles that offer four levels of difficulty. Both programs allow parents to create new puzzle pictures for children to assemble. *Puzzle Mania* is the adult version of the game.

Micro Habitats, also for the Apple and Commodore 64, allows children ages 6 to 12 to create and animate scenes by placing animals and plants on varied backgrounds. *Cogito* is a strategy game for two players using an Apple. During



the course of play, challengers roam across an ever-changing game grid, accumulating money and land. All of the new Reader's Digest introductions sell for $39.95.

DLM Teaching Resources introduced three new early childhood programs for Apple. *Alphabet Circus* includes six different activities designed to help children with alphabetical order, letter recognition, keyboard skills, text creation, and problem solving. *Number Farm*, which also includes six activities, stresses the concept of number, recognition of numerals and number words, numerical order, keyboard skills, and problem solving. In *Shape and Color Rodeo*, children learn shape and color recognition and color mixing while they sharpen their visual perception, eye-hand coordination, and keyboard skills. The programs sell for $29.95 each.

Programs from DLM intended for classroom use include *Hint and Hunt I and II*, which are built on the principle of fast, automatic word recognition, and *Construct-a-Word I and II*, which are designed to help children read words quickly and accurately by upgrading their knowledge of consonants, consonant clusters, and phonograms. Each program includes 10 disks, 24 blackline masters for desk practice, and a 32-page teacher's manual; requires the Supertalker speech synthesizer; and sells for $185.

The Learning Company introduced two new reading programs, two number programs, and its first art program. *Reader Rabbit and The Fabulous Word Factory* teaches pre-reading and early reading skills to children aged 5 to 7. By helping Reader Rabbit match pictures and words, label boxes, and load words into a word train, children learn to recognize and spell more than 200 three-letter words. The program sells for $39.95 on Apple disk.

Word Spinner allows six- to ten-year-olds to build more than 500 three-letter words and 1000 four-letter words. In so doing, they learn to recognize word patterns and develop vocabulary and spelling skills. The game is available for Apple, IBM, Commodore 64, and Atari computers for $34.95.

Number Stumper is a computerized version of a classic 14th century game of chance which teaches basic addition and subtraction to children ages 6 to 10. Available for Apple computers, it is priced at $39.95. *Addition Magician* is a timed number strategy game that teaches six- to ten-year-olds the basic concepts of addition and flexible thinking about numbers. It is available for Apple, IBM, and Commodore 64 for $34.95.

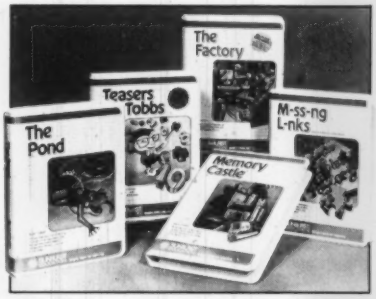
In *Colorsaurus*, dancing dinosaurs and a volcanic world teach children aged 3 to 6 color discrimination, matching, and memory skills. The program, which sells for $29.95, is available for Atari computers.

Games For Girls

Addison-Wesley announced four innovative games designed specifically for girls. *Jenny of the Prairie*, *Chelsea of the South Sea Islands*, *Cave Girl Clair*, and *Lauren of the 25th Century* are colorful graphic adventures for the Apple which sell for $39.94 each.

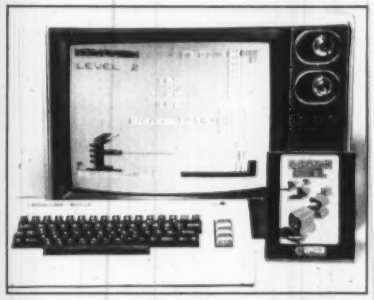
Super Strategies for the SAT is said to teach high school students to "think through" the SAT by providing a complete, computerized method of test preparation. The program shows students what is being tested in each question while helping them to think clearly and take tests more successfully. Currently available for the IBM PC at a suggested price of $79.95, the program will soon be announced for Apple, Atari, Commodore, and PCjr.

Sunburst Communications announced five packages, three of which are also licensed to and marketed by HesWare. *The Pond*, *The Factory*, and *M-ss-ng L-nks* are described above. Sunburst will offer *The Pond* on disk for Atari, Commodore 64, IBM PC, and TRS-80 Color Computer; *The Factory* on disk for Apple, Atari, Commodore 64, and TRS-80 Color Computer; and *M-ss-ng L-nks* on disk for Apple, Atari, IBM PC, and TRS-80.



Memory Castle, for ages 10 to adult, is an adventure-type game for the Apple designed to "stretch the powers of your memory and expand the strength of your concentration." *Teasers by Tobbs*, for ages 8 to adult, helps players practice arithmetic while developing thinking skills by working through puzzles. It is available for Apple, Atari, and TRS-80.

Computer Software Associates was showing five programs, all offered on cassette for the Vic 20. *Math Duel*



($19.95), designed for children in grades one through six, teaches basic number skills by pitting the student against a dragon in a den. *Tiny Tutor* ($19.95) is for youngsters between 2 and 7. It features mathematical problems delivered by "trollies on a track." *Vic Sketch* ($14.95) is a seven-color etch-a-sketch. *Composer* ($14.95) teaches the rudiments of music, enabling the user to compose simple melodies using the computer to key in the notes and rests, and *Sprintyper* ($19.95) is a tutorial typing program.

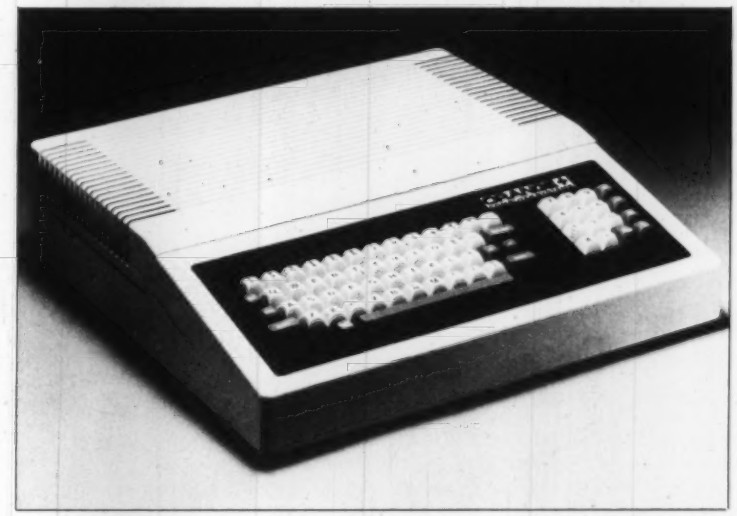
For the Commodore 64, CSA announced *64 Pak*, an educational package which includes ten programs: Flash Cards, Speed Read, Sign Talk, Life Expectancy, World Clock, States and

Educational News

Orange Plus Educational News located at 23801 Calabasas Road / Suite 2050 / Calabasas, CA 91302 / (213) 999-5210

Legal Apple[Type] Compatible

New Computer runs CP/M & Apple[Type] Software



CALABASAS - Now instructors can teach Apple-type programs such as LOGO in one class and professional-style word processing in another without any hardware changes. Dual microprocessors (Z80-A & 6502, two computers in one case), with the radical new Orange Plus development, the "EuroROM", allows the machine to read/write/work with Apple-type software as well as CP/M programs and access either CPU via the keyboard.

The ***"ORANGE+TWO"***™ is a brand new direction in the evolution of the personal computer. ORANGEFORTH-83, a derivative of Fig-FORTH — a readily available public domain language, is resident in ROM*. Also included is CP/M 3.0, Digital Research's latest CP/M version. There is also a built-in disk drive controller for two Apple-type drives, a cassette interface, joystick port, color graphics and ASCII keyboard with numeric keypad. For expert word processing, the keyboard features upper and lower case (lower case characters are true descenders) with auto repeat.

This new breed of computer is a break-through for educators and school systems throughout the world. The ability to run both Apple-type and CP/M software on the same machine relieves financially-pressed educators from expensive equipment burdens, allowing them to spend more money where it counts... **on the teachers.**

*Available on disk at extra cost.

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Built-in disk drive controller card for two Apple-type drives	n/c
Numeric keypad with separate return key	n/c
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Cassette Interface	n/c
Grounded metal base plate	n/c
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ORANGEFORTH-83, Z80-A FORTH language, resident in ROM	n/c
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Orange Plus Joystick (works on "ORANGE+TWO", Apple II, II+ & IIe)
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10MB (Formatted) 5¼" half-height Winchester Hard Disk Drive
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Controller & Interface for Hard Disk**
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The above are suggested retail prices. Prices may vary from state to state.

Capitals, Mortgage Calculator, Big Time, Cash Register, and Perpetual Clock.

A newcomer to the US market is **Cymbal Software**, a Canadian manufacturer of software for the Commodore 64. *Trivia 1* is a quiz game containing 1600 trivia questions on two disks. Also available are educational packages covering English and Spanish, history and geography, science, mathematics, music theory, and pre-school skills.

Programs For Elementary Children

American Educational Computer announced 12 programs for elementary school children. The *Spelling* program is built on the concept of "test—teach—test" which eliminates words the student already knows. *Learning about Sounds in Reading* introduces phonics and presents the skills necessary for successful reading to children in kindergarten through third grade. The program is available for Apple, Atari 800, Commodore 64, TRS-80 Color Computer, IBM PC, and PCjr.

In the EasyReader series, *Learning About Words in Reading 1 and 2* focus on the structure and principles of the English language. The programs are aimed at children in grades 1 through 3 and 2 through 4, respectively. The goal of *Reading Comprehension Skills 1, 2, and 3* is to develop the ability to read with a high level of understanding in children in grades 1 through 8. The lessons emphasize integration and application of learning materials.

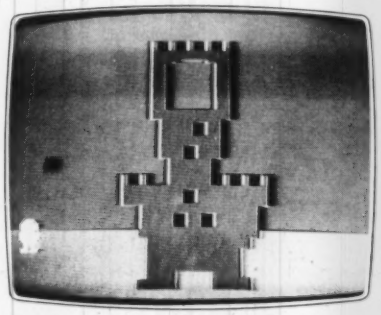
The Matchmaker series includes five diverse packages: *Matchmaker Grammar, Matchmaker Vocabulary, Matchmaker U.S. Geography Facts, Matchmaker World Geography Facts,* and *Matchmaker Spanish Vocabulary.* Packages in the EasyReader and Matchmaker series are available for Apple, Atari 800, IBM PC, Commodore 64, and TRS-80 Color Computer and sell for $39.95 each.

Adventure Alpha and The Islands of Beta, available on disk for Apple and Atari, is the first EduVenture package from **EduFun**. The two problem-solving programs challenge kids 12 and up to solve classic math and logic problems to survive in an adventure-type situation. In *The Great Number Chase*, kids aged 7 and up create mathematical equations while maneuvering through a maze on the Apple screen.

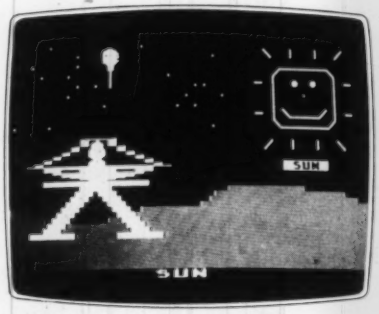
Word Machine, which is available for Apple and Atari, offers ten levels of difficulty for players who search for hidden words. *FourWord and WordLift* offers two games on Apple or Atari disk for ages 7 and up. In *FourWord* players solve word puzzles, and in *WordLift* they race against time to alphabetize a group of nine words.

PDI announced seven new packages on disk and cassette for Atari computers. The *Pizza Man/Hi Rise Shopper* package includes two games intended to build matching and directional skills. *Robin's Halloween* and *Teddy's Magic Balloon* are both interactive stories for young children which combine computer programs with voice narration.

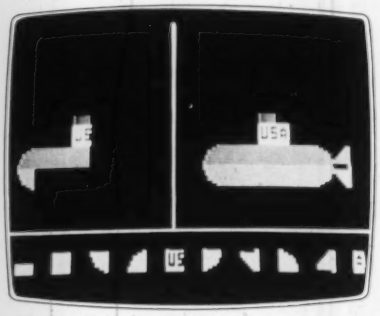
Picture Blocks, for children 1 to 4, is designed to build spatial skills and reinforce shape recognition. *Sammy and the Lighthouse* is a sequel to *Sammy the Sea Serpent* which requires children to match letters and patterns to help



Robin's Halloween from PDI



Teddy's Magic Balloon from PDI



Picture Blocks from PDI

Sammy rekindle the light in the lighthouse. *Giant's Tooth* includes three games designed to give children aged 4 to 8 practice in classifying sets of geometric objects according to their attributes. The above PDI packages range in price from $21.95 to $36.95 and are available on both disk and cassette.

Also announced by PDI was *Franglais*, a program designed to help children and adults translate 1000 words and 100 sentences from French to English or English to French. The package is available on disk or cassette for $49.95.

Way in the back of the West Hall in a no-frills booth, we found **Alpha Software**, a no-frills software company. Their Know How line of self-study programs for the Apple includes 80 packages on topics ranging from auto mechanics to principles of rocketry. Each package holds one disk and a documentation booklet. Pricing is $14.98 for elementary and high school level subjects and $19.98 for college and professional level.

Softwave announced *Flower Power*, an educational math game for ages 5 to 15 which encourages players to practice addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals. The program is available on disk for Commodore 64 and Apple for $39.95.

For more advanced students, **Quick Brown Fox** introduced *Physics Lab*, a tutorial game for Commodore 64. The program provides a simulated world that includes masses, uniform gravity, inclined planes, springs, pendulums, inverse-square gravity, friction, and rolling, and is designed to provide the player with an intuitive understanding of elementary physics.

Impact Marketing was showing a five-album *Basic Learning Series* designed to supplement school instruction in language arts for children in kindergarten through seventh grade. The packages are available on Commodore 64 disk and Vic 20 cassette and range in price from $34.95 to $89.00.

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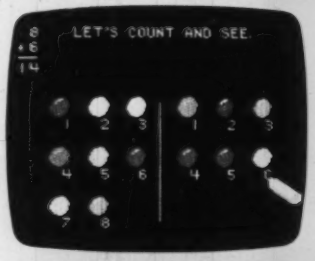
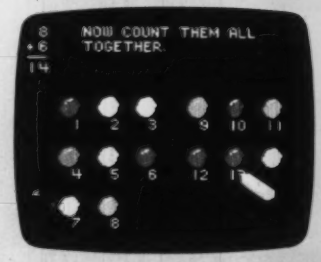
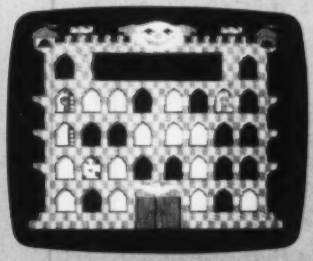
Because the professor can advance through higher skill levels as your children's math ability improves, *Playful Professor*™ will help them with the math taught in all grades of elementary school.





The Professor uses colorful graphics to provide children with an identifiable illustration to convey an abstract idea.

You can enjoy *Playful Professor* ™ with your family too. There are several different skill levels so you can participate at a harder level than your children while spending productive, quality time with them.



After each correct answer a player moves closer to capturing the key from the ghost and leaving the castle a winner.

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Playful Professor runs in 48K on the Atari and Commodore 64 computers. See your local software dealer. $29.95

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Actual photographs from Commodore 64.

Software From Hardware Manufacturers

Commodore introduced ten educational software packages. The new Micro School series features the Commodore Kids, a group of animated children and pets who will provide continuity for the series. *Math Facts* and *Numbers Galore*, both aimed at elementary school children, are the first two programs in the series. They are available for the Commodore 64.

From the Milliken EduFun series come programs for children ages 7 to 12. *Gulp!/Arrow Graphics* for the Vic 20 tests visual and numerical problem solving. *Frenzy/Flip Flop* is available for both the Vic and the Commodore 64. It includes two programs, one of which offers subtraction and multiplication practice in a game format; the other tests visual problem-solving skills in recognizing differences between complex colored shapes.

Kinder Koncepts for the Commodore 64 is a series of five disks totalling 40 programs for children in the 4 to 6 age range. Each disk contains four math programs and four reading programs. The programs record and display the child's progress on the screen, allowing parents to monitor performance.

Additional educational packages introduced include *Chopper Math* and *Type Right* for the Commodore 64.

Not to be outdone, **Coleco** announced an entire category of Family Learning software. Included in the category are Adventures in Learning programs which use familiar Dr. Seuss, Richard Scarry, and Smurf characters in educational and entertainment contexts; Homework Helper programs which provide tutorial assistance; and Self-Improvement programs which help users improve their general knowledge skills.

Good grief! *Electric Pencil* tells me that I have just written 3774 words on educational software at CES. That is more than we gleaned from many strictly educational shows in years past. It certainly seems that the educational software market has come of age. Watch these pages to learn where it goes from here.

Companies Mentioned In This Article	Reader Service Number
Addison-Wesley Publishing Company Reading, MA 01867 (617)944-3700	471
Alpha Software 2335 Moreno Dr. Los Angeles, CA 90039 (213)667-1144	472
American Educational Computer 2450 Embarcadero Way Palo Alto, CA 94303 (415)494-2021	473
Avalon Hill Game Company 4517 Hartford Rd. Baltimore, MD 21214 (301)254-5300	474
CBS Software One Fawcett Pl. Greenwich, CT 06836 (203)622-2525	475
Coleco Industries 999 Quaker Lane South West Hartford, CT 06110 (203)725-6000	476
Commodore International 1200 Wilson Dr. West Chester, PA 19380 (215)431-9100	477
Computer Software Associates 44 Oak St. Newton Upper Falls, MA 02164 (617)527-7510	478
Cymbal Software c/o Lectron Int'l Marketing 1200 Route 23 Butler, NJ 07405 (201)838-2003	479
DLM Teaching Resources One DLM Park Allen, TX 75002 (214)248-6300	480
EduFun 1100 Research Blvd. P.O. Box 21579 St. Louis, MO 63132 (314)991-4220	481
Electronic Arts 2755 Campus Dr. San Mateo, CA 94403 (415)571-7171	482
Epyx 1043 Kiel Ct. Sunnyvale, CA 94089 (408)745-0700	483
FlipTrack Learning Systems 999 Main, Suite 200 Glen Ellyn, IL 60137 (312)790-1117	484
Human Engineered Software 150 North Hill Dr. Brisbane, CA 94005 (800)227-6703 (800)632-7979 in CA	485
Impact Marketing 161 West 4500 South P.O. Box 21445 Salt Lake City, UT 84121 (801)268-1634	486
The Learning Company 545 Middlefield Rd., Suite 170 Menlo Park, CA 94025 (415)328-5410	487
PDI 95 East Putnam Ave. Greenwich, CT 06830 (203)661-8799	488
Quick Brown Fox 536 Broadway New York, NY 10012 (212)925-8290	489
Reader's Digest Software Pleasantville, NY 10570 (800)431-8800 (914)241-5727	490
Scarborough Systems 25 North Broadway Tarrytown, NY 10591 (914)332-4545	491
Scholastic, Inc. 730 Broadway New York, NY 10003 (212)505-3000	492
Sierra On-Line Sierra On-Line Building Coarsegold, CA 93614 (209)683-6858	493
Softsync 14 East 34th St. New York, NY 10016 (212)685-2080	494
Softwave Summertown, TN 38483 (615)964-3573	495
Spinnaker Software 215 First St. Cambridge, MA 02142 (617)868-4700	496
Sunburst Communications 39 Washington Ave. Pleasantville, NY 10570 (800)431-6616 (914)769-5030	497
Weekly Reader Family Software 245 Long Hill Rd. Middletown, CT 06457 (203)347-7251	498

DIGICON 83

Paul D. Lehrman

It's not easy to picture Todd Rundgren, Robert Moog, David Em, Herbie Hancock, and Ed Emshwiller in the same place at the same time—even a place with the postcard appeal and glorious August weather of Vancouver, British Columbia.

But imagine, if you will, a convention—one that draws on a particular segment of the audience that would attend NAMM, or SMPTE, or Siggraph. Now shift the emphasis away from the dealers, the DP freaks, and the hardcore hackers, and invite only artists and musicians, serious ones who are using the latest in computer technology to extend "the edge of the art."

That was the idea behind Digicon 83, the first International Conference on the Digital Arts. The three-day conference this past August was the result of three years of planning by the Computer Science department of the School for Continuing Education at the University of British Columbia.

Why Vancouver? For one thing, that is where the University is. Maybe just as important, it is probably the only city on the continent with civilized weather at that time of year. But for me, the conference was a terrific excuse for visiting a place I have wanted to see ever since I saw this jeweled city appear just beyond the mountains in the 360-degree Canadian travelogue film at EPCOT.

Digicon was not a big conference; although attendees came from as far as Japan and South Africa, they totalled only about 300, although the one public concert drew an audience of some 700. Despite its relatively small size, it was an intense experience, with lectures, demonstrations, public performances, commercial and artistic exhibits, and plenty of high-tech partying.

Sunday Evening: We Become Aliens

Interstate 5 from Seattle turns into B.C. Route 99 at the Canadian border, where the absurdly young customs agent pricks up his ears when I tell him I am attending a computer convention. "Do you have any computers?" he asks. There is a microprocessor in my camera and one in my tape recorder, but other than that my data-input devices consist strictly of pens and paper. "Have a good time," he says unsmilingly.

Southern B.C. is farmland, with unimaginably high mountains looming on the horizon. 99 takes you through fields, down into a tunnel, around a corner, and suddenly there is this metropolis, stuck precariously between the mountains, now quite imaginable but just as high, and the Gulf of Georgia. The rented car goes into an underground garage, an elevator takes me up 18 floors of the Four Seasons Hotel, and once again I am staring at mountains.

Downstairs in the Harvester coffee shop, I meet Ellen Lapham, president of Syntauri Corporation, makers of the AlphaSyntauri Apple-centered digital synthesizer. Both of us are extremely weary from travelling, so of course we launch into a heated and completely pointless discussion over keyboard-based synthesizers. I'm agin' 'em.

The next most precious gift

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What will you see as your child explores the wonders of The Learning Company software? Possibly a delighted three-year-old building *Juggles' Rainbow*™ in brilliant color. Perhaps an utterly fascinated five-year-old sorting out the tall thin red Gribbits and short fat blue Bibbits in *Moptown Parade*.™ A seven-year-old, a ten-year-old or even a teenager, deeply involved in designing logical kicking machines to control *Rocky's Boots*.™

What's your reward? It may be a moment of shared pride as your six-year-old shows you the solution to one of *Gertrude's Puzzles*.™ Or it may be the special satisfaction you feel when your grown-up teenager calls home from college to say that Boolean algebra seems, somehow, very familiar.

You can be sure of one thing. It will be very precious.

The Learning Company™

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Microsoft Basic II (R)	$62	Data Perfect (D)	$74
Atari Writer (R)	$68	C-65 (D)	$58
Assembler Editor (R)	$42	Max-65 (D)	$58
Pac Man (R)	$30	Action (D)	$65
Donkey Kong (R)	$34	Ali Baba (D)	$20
VC (D)	$17	Softporn (D)	$20
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CIRCLE 116 ON READER SERVICE CARD

Monday Morning:
Our Education Begins

I feel like I'm back in college: half the convention delegates are lining up behind me at the coffee shop, anxious to grab some breakfast before running down the block to the Hotel Vancouver for the 9:00 a.m. lectures. Over at the hotel ballroom, it is more hurry up and wait, while an obviously overworked stage crew tries to get an enormous PA system going. The opening remarks by various administrators and grant-givers, reinforce the collegiate atmosphere and remind me why I religiously avoided early morning classes.

Finally, someone with something to say takes the podium. Ed Emshwiller, dean of the School of Film and Video at the California Institute of the Arts and bearded guru of computer animation, shows his classic eight-months-in-the-making three-minutes-in-the-viewing film "Sunstone." It is a modest but beautiful little piece, featuring a pleasant androgynous face poking through 3-D surfaces, being transformed with color changes and solarizations and placed on planes rotating through space, all accompanied by dense minimalist synthetic music.

Emshwiller, who did the film while he was at the New York Institute of Technology, talks about its creation. He went to NYIT, he explains, to use computers to *make* images, not just manipulate them. When he first arrived, his colleagues asked him what he wanted to do, and when he started talking about a 90-minute film, they all laughed. The major problem in making the film was not creating the images; it was choosing among them. "Late at night I would get carried away," he says, showing a slide of a face drawn entirely out of eyes.

The opening remarks by various administrators and grant-givers, reinforce the collegiate atmosphere.

Next up is Bill Buxton, University of Toronto composer with an axe to grind. "It's time to rethink the interface between electronic instruments and the user," he says. "We have gained control, in that we now have a great deal of precision and a vast potential for making music, but at the same time we have also lost it. We have to get away from the 'overblown electronic organ' syndrome." I remember last night's discussion and feel vindicated.

Buxton's solution for re-humanizing electronic instruments is "gesture controllers." "Gestures have meaning," he says, "for both performers and listeners. If we want to expand the range of musical expression, why can't we use new gestures—blowing, sucking, squeezing, kicking, caressing—instead of emulating the past?"

The rest of the morning I spend at the Robson Media Centre, a subterranean exhibit hall *cum* lecture hall and cinema, complete with Tourist Centre and a bunch of fast-food counters. Downstairs a dozen or so manufacturers of various kinds of hardware are hawking their wares.

Roland is showing its CompuMusic 800R, a fairly useful device for synthesizing pop-music tracks. Although it contains six voices, a drum machine, and interfaces for microcomputers and slave synthesizers, it has no keyboard, and is therefore not programmable in real time (although it does have editing capability), and the preset synthesizer voices can't be changed. The demonstration, a painfully slow (and loud) version of some pop tune so obvious I didn't bother to write down the title in my notes, is driving everyone nuts.

A few feet away is Oberheim's booth, where a bunch of their synthesizers are hooked up to and playing each other, and this little orchestra sounds pretty good. I mention MIDI, a recently developed serial synthesizer interface that will be discussed at length tomorrow, and the Oberheim folks put it down. "It's not fast enough to do 16-voice polyphony," says one. Oberheim has developed its own parallel interfaces, which it is not about to abandon. "We like them too much to give 'em up," he says. "Maybe we'll do both."

Yamaha is being represented by a local music store, and the personnel at the booth don't seem to know much about the FM synthesizers they are showing, the DX7 and DX9. FM is nothing new for big-time computer synthesists, but it is a relatively recent development in consumer level equipment. Handled correctly, it can produce some fascinating sounds, simulations of both real instruments and original ones. These units sound incredible, although no one can tell me why.

Why can't we use new gestures—blowing, sucking, squeezing, kicking, caressing—instead of emulating the past?

Exhibit floor at the Robson Media Centre.

All photos © 1983 Paul D. Lehrman.

Syntauri is showing off its *Simply Music* education program, which teaches keyboard technique with a software disk, a song disk, and various music books. The nice part of the program is that it simulates the old "Music Minus One" records: the computer plays one hand, and you play the other. But it also has a feature that stops the music until you play the right note, which one visiting music teacher vehemently objects to: "It's no better than hitting the kid with a stick if he makes a mistake," she argues. Unprepared for this verbal onslaught, Syntauri's Robin Jigour meekly promises to think about it, and offers to send

her a copy of the program so she can be more specific in her criticisms.

Syntauri's closest competitor, Passport Designs, maker of the Soundchaser Apple-based synthesizer, doesn't seem to be particularly interested in selling hardware, although software catalogs are being handed out. Also being passed around is a puzzling questionnaire asking how folks feel about the concept of MIDI. Are they planning to implement

There is a booth for the Fairlight CMI, the Australian super-synthesizer, but there is no way to get close enough to it to see what's happening.

it on their systems? "We're just trying to see what people think," says one fellow vaguely.

There is a booth for the Fairlight CMI, the Australian super-synthesizer, but there is no way to get close enough to it to see what's happening. In the booth, manned by one company rep, there are at least a dozen people crowded around the lone terminal, most of whom, I suddenly realize, are from the other synthesizer companies.

But there is satisfaction to be found on the floor: a German machine called the PPG Wave 2.2. It is being demonstrated by a local rep, who has the demo routine down pretty well. It is very popular in Europe, he explains, especially among syntho-poppers like Thomas Dolby, but it has been available over here for only about a year. It comes in two parts: a keyboard and a mini-sized computer. The keyboard combines digital waveform generation with analog filtering, which gives it the organic "feel" of the early analog machines. Any note can be run sequentially through up to 64 waveforms, giving the sound a sense of life totally impossible with single-wave synthesizers. The "instrument" programmed in for the demonstration is a motorcycle: it starts, kicks over, roars, takes off, switches gears, and disappears into Doppler-shift oblivion.

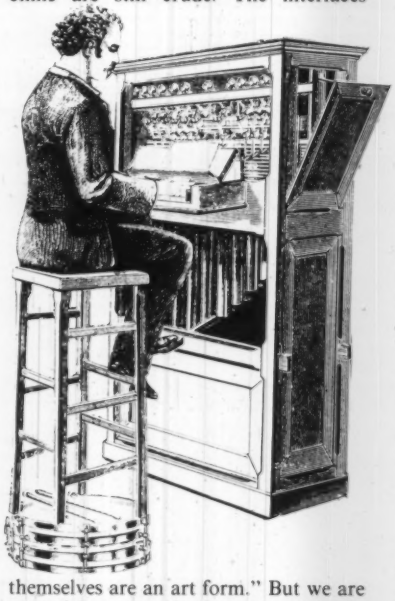
The optional computer (Waveterm) uses a 6809 processor and two 8" disk drives to provide an incredible range of functions. On the screen, you can draw waveforms, equalization curves, and envelopes, and there is even zoom capability for zeroing in on and adjusting individual sections of the drawings. It can sample real sounds, and do off-line note editing, looping, and all the neat stuff most such instruments can handle. It can even, according to the rep, be hooked up to an ASCII keyboard and printer and used as a mainframe computer, but neither he nor anyone else on this side of the Atlantic seems to know any details.

He tells me that the price is about $60,000, which sounds steep, but the U.S. distributor sets me straight a couple of weeks later: the keyboard alone is $7950, and with the computer the price is $16,900. Compared to the others in its class, it is a veritable steal.

Monday Afternoon:
We Approach The Edge

"Commercial applications" the conference schedule says, but no one expects an hour of Levis spots and computerized disco. First up is Alvy Ray Smith, leader of the Computer Graphics Project at Lucasfilms.

"These are the early days," he says. "Interfaces between artist and the machine are still crude. The interfaces



themselves are an art form." But we are not going to get a dry lecture: we are going to watch a piece of *Star Trek II.*

Paramount Films contracted with Lucasfilms' Industrial Light and Magic to do special effects for the flick. ILM, in turn, gave the Genesis Project to Smith's gang. "We're mostly R&D," notes Smith. "We had to get permission to stop our research work and go into production."

The Genesis Project was a video, showed to Captain Kirk at the beginning of the film, demonstrating the effects of a special space probe on a planet. It instantly wipes out all existing life forms and starts the process of evolution all over again, in super-fast time. "Because it was supposed to be a video, Paramount asked us to do it with 500-line resolution," says Smith. "We went along, even though we could have done it with much higher quality, but you could only see the difference in the first few rows."

The 60-second segment took six months to produce. "They originally asked for a two-dimensional effect, but that was boring," says Smith. "So we did it in 3-D, with fancy camera angles which would be almost impossible with models, like the camera spiralling out and flipping over backwards." Fractal functions were used to "organicize" the effect, by introducing elements of randomness, and separate programs used for the various elements were laid on top of each other digitally.

"We now know how to solve aliasing problems, like the strobing that occurs when image boundaries are moving," he says. "We just compute in the smear. We figure out how far the image—a star or the edge of a planet—is going to move within the time that the 'camera shutter' would be open."

Smith goes on to describe Pixar, a machine his group is now building, that will all but eliminate the optical printer in the production of film special effects. "One scene in *Jedi* had 62 picture elements," he explains, "and it required 500 passes through the printer. That's a lot of multiple exposures, and if you make a mistake, you have to start over." Pixar will eliminate all of these problems by doing all of the compositing inside the computer.

"It reads the film image with a laser, enters it into the computer, which can play with it and then put it back on film. It will make 85 percent of the film work unnecessary." But Smith doesn't imagine that film will be totally obsolete for at least five to ten years yet: "We'll still use real spaceship models.

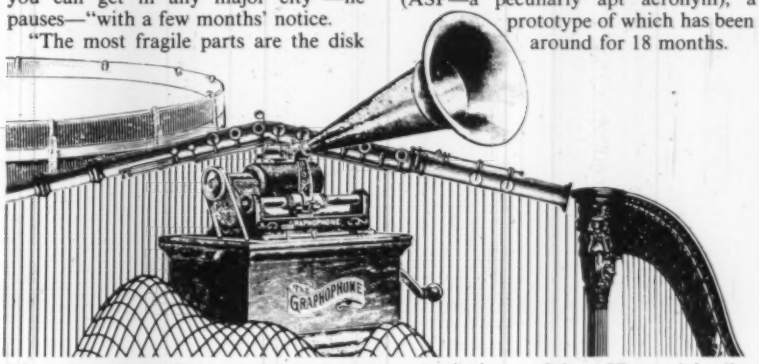
"You can make any predictions you want, as long as you don't put a time limit on them," he says. He notes that the next development in any computer-related field is always "two years away." The audience takes this wisdom to heart: someone asks when Pixar will actually be on line, and the rest of the crowd, in unison, yells "Two years!!" Actually, says Smith, the first prototype should be operational by the end of '83.

The next speaker is Roger Powell, keyboardist with Todd Rundgren's Utopia, who describes two projects he has designed for himself. The first is a self-contained live-performance digital synthesizer he calls Databoy. It is built around an S-100 mainframe with a Z80

microprocessor. The choice of sound-generator (oscillator) card was easy; only one such card, made by Casheab, can plug directly into an S-100. It uses 12-bit D-to-A conversion, with 16 oscillators available. The voices are arranged in 32 registrations, each of which contains 12 instruments.

"The parts were ordered through ads in *Byte*," he says. "The machine is very reliable: all the parts are standard items you can get in any major city"—he pauses—"with a few months' notice.

"The most fragile parts are the disk drives, but since the operating system only takes up 8K, we could conceivably put it on EPROMS and do away with the drives all together."



The other project is Texture, an Apple-based sequencer. A multichannel D-to-A convertor is plugged into a port on the computer, and it feeds voltage levels and trigger pulses—corresponding to notes, keys, rhythms, and other musical parameters—to a variety of outboard synthesizers. All of the data remain resident in the Apple memory, so it is a fast system: there is no need for disk compilation. The computer can change notes and tempos in real time, and it even has a built-in random note generator.

Late Monday Afternoon:
The Ultimate Audio System

Everyone is running late today, and the lecture scheduled for 3:30 doesn't get started until after 4:00. It is called "Production Techniques for Digital Music"—an innocuous enough title that gives no indication that one of the biggest bombshells in the history of audio is about to be dropped. The speaker is James A. (Andy) Moorer, leader of Lucasfilm's Digital Audio Project. A conservatively dressed gentleman, he immediately gets the audience laughing by flashing a slide of a Moviola film-editing machine and announcing "We meet the enemy."

Music for film, he explains, is totally at the mercy of the film editor, which makes it a living hell for the composer, who has only six or eight months to work on the thing before it is released. "During the editing of *Jedi*," he recalls, "there were four people who did nothing but carry reels of film back and forth between studios for recutting."

So his division built a self-contained digital audio processing station that could handle effects production, dialogue modification and replacement, sweetening, mixing, and music production and storage. It is known as the Lucasfilm Audio Signal Processor (ASP—a peculiarly apt acronym), a prototype of which has been around for 18 months.

At the heart of the ASP are eight digital signal processors, each one using up to eight Motorola 68000s and eight Studer D-to-A convertors. Storage is handled by eight 300Mb CDC 9766 hard disk drives per processor, each disk containing about 14 minutes of mono sound. The software is written in C for a Unix environment.

The system is built for flexibility: it can be run with any kind of front end that an engineer or musician might feel comfortable with, like a mixing board, an editing console, even a keyboard, violin, or touch-pad synthesizer. Likewise the machine specifications are variable: there is no limit to the number of oscillators available, and both sampling rate and word size are adjustable.

Moorer talks about a couple of specific applications: cleaning dialogue, in which the computer extracts the loudest signal (the voice) and eliminates all of the others, such as mechanical noises and people falling on the set and screaming; and "funny voices" for the famous alien creatures of *Star Wars*.

He plays a tape that demonstrates a smidgen of the capability of the unit. 54 pitches on a cello were recorded and digitized; the computer then played them back at random, up to eight at a time. "We can take one tone and synthesize the entire range of the instrument—and more—from that, or we can record each note individually and call it up when we need it." Similarly, sound effects can be stored on disk and instantly called up.

But it isn't until someone asks, half-jokingly, if the unit is going to be commercially available that the audience realizes the implications of what Moorer is saying: "By Christmas of '84," he says quite seriously. "It will cost about $700,000. The commercial version of the ASP will record and manipulate 32 channels of audio, and will hold 800 minutes of monaural sound on line at a time. It will replace all of the equipment in a standard recording studio—tape recorders, sound processors, mixing console, and even most of the musical instruments—except the microphones and monitor speakers. A bargain."

Monday Night: The Concert

In the spanking-new Queen Elizabeth Theatre, something called The Electric Night Show is scheduled for 8:30. When the doors finally open about 8:25, several technicians and performers are still scampering around the stage, so it is another half hour before the concert starts. At least one member of the audience, looking at the printed program, is heard to say "I thought we were going to hear the Electric *Light Orchestra!*" The opening number isn't on the printed program either: it is a spunky little video called "Act III" by Dean Winkler and John Sanborn, with music by Philip Glass. Then we are confronted by someone named Steve Miller, who claims to be the host of the program.

I figure I am missing something—that this guy is probably a big deal in Vancouver, but I find out later that I am not alone in my ignorance: Cindy Noakes has never heard of him either. He is a perfect cross between a truly bad stand-up comic and a UHF game show emcee. He tells execrable, pointless jokes, and brags of his ignorance of what the concert is about, but at least he pronounces everyone's name right.

Someone throws a switch, and a rectangular area of the stage is surrounded by red LEDs. We experience "XT-N-BA," a computer-choreographed dance piece, that consists mostly of glides and turns, with some dog-like bending over and panting, by a half dozen dancers in two-tone leotards, accompanied by unusually static live and taped music. None of it makes any sense at all, and everyone on stage seems a bit anxious and confused. Tomorrow, at a lecture by the choreographer, we will find out why.

The next event, fortunately, is far more successful. The piece is called "Night Satellite," and features Vancouver composer Jean Piché playing a Fairlight CMI. Piché it turns out, is not performing alone; two other composers, Osamu Shoji and Martin Wesley-Smith, are also working their Fairlights but we can't see them, because Shoji is in Tokyo and Wesley-Smith is in Sydney, Austra-

lia. They are linked to each other by satellite, which leads to some interesting problems: because of the built-in 300-millisecond delay of a satellite hop, Australia has to hold back its entrances for a beat after hearing a cue from Canada, which in turn must pause after getting a cue from Japan. The machines are also set to play *each other*, in a continuous round-the-world loop.

Some of us get a little uneasy before the piece starts—the communication line between the three performers is piped onto the house PA, and it has a bad echo and sounds dreadful. There is no such problem with the audio lines, however, and the sound is remarkably clean. It is hard to determine exactly who is playing what (a situation exacerbated by an unbelievably inept video cameraman who insists on showing images of Piché's feet on the projection screen), but it seems that Piché likes to play Morse-code like patterns and percussive riffs, while Australia is into sounds of guns, whips, and ripping metal, and Japan is predisposed to heavy synthetic rock and roll. Although the music seems a little disjointed, there is no mistaking the energy of the performance, and when it is over, the usually unsmiling Piché cracks a wide grin. The communication line is put back on the house PA, revealing that all is not perfect: "Do you want the bridge again?" asks an Australian voice. As the three audiences, thousands of miles apart, applaud each other, Piché proclaims, "Next year, Africa, Europe, and South America!"

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After intermission comes "Scenes from the Reflection Afterwards," a piece by Bill Buxton and John Celona, a composer from Victoria. We know we are in trouble when one of the speakers of the "octophonic" sound system starts buzzing and crunching uncontrollably. A few minutes into it, Buxton reaches over to play his custom-built touch tablet (called Drum), but it refuses to make a sound. His hands are visibly shaking as he wiggles the cord to the thing, to no avail.

Celona, meanwhile, is playing a four-chord rock riff on his Synclavier, which is getting louder and more obnoxious by the second. This apparently is supposed to be Buxton's Drum solo. The audience is getting restless, and someone (reportedly Todd Rundgren) throws a paper airplane at the stage.

Finally, to everyone's relief, it is over. Buxton isn't talking, but a few days later Cindy Noakes explains what happened: the Drum, which was not designed to go on the road, was shipped across the country by Air Canada, who for some reason decided to disassemble it before Buxton could pick it up. Most of the rehearsal time Monday afternoon was spent trying to put it back together.

The finale of the program is "Visual Music," performed by Roger Powell and laserist Richard Vanceunebrouck-Werth. Miller announces that a dancer will accompany the piece. The piece features Powell's Texture machine controlling a bank of Roland synthesizers. The first movement, music only, is funky and oppressively loud. In the second, the lasers come in, and throw a few red and green patterns on the balcony.

For the final movement, smudge pots fill the stage with thick, black smoke,

and the dancer starts to walk on the stage. She never gets to the front, however, because the lasers keep going off and Vanceunebrouck-Werth keeps running to the back of the stage. It seems that somebody has plugged all of the lasers into one 15-amp electrical circuit, and the breaker keeps tripping. Finally, he gives up, and the concert sort of ends.

Late Monday Night:
We Realize Why We're Here

After the concert, most of the participants go off to get good and drunk, while Ellen Lapham and the rest of her Syntauri crew head over to the Garden Lounge at the Four Seasons with me tagging along. Also along is Herbie Hancock, a Syntauri user, who slipped into town earlier in the day.

After a couple of rounds and some breezy talk about tax brackets, German Steinway pianos, and plastic oboes, the waitress announces last call and the elderly black gentleman playing the Yamaha grand piano over in the corner starts to lock it up. Hancock calls over, "Please don't!" The gentleman asks Hancock if he is a musician and where does he work? "All over the world," smiles Hancock. "And what is your name?" inquires the man. Hancock stands up and introduces himself, and even after the gentleman sees Hancock's name on his Digicon badge, he is still skeptical.

Hancock sits down and starts to play: two beautiful melodic improvisations on tunes I can't quite name. The other pianist watches him intently. After about 15 minutes Hancock stops, and the older man reaches out his hand again. "My name is Linton Garner," he says. "My late brother Erroll and I have been following you for years." The two musicians talk quietly, while the rest of us drink in the moment—technology or no, art and music are about people communicating with people, and we have just experienced that in its highest form. Not even the drunk in the corner screaming "Do you know any rockabilly?" can break the spell.

Tuesday Morning:
MIDIocre Moog And More Moorer

Once again, we are dragged out of bed for an early morning lecture, this one by Dr. Robert Moog, father of the keyboard synthesizer, a conception for which some will never forgive him. The lecture hall at the Robson Media Centre is packed to hear a living legend talk about the next step in the development of electronic instruments: MIDI.

MIDI is a digital, serial, bidirectional data stream, with a transmission rate of 31.25 kilobaud. It runs over standard audio cable: two conductors and a shield. Through it, properly equipped synthesizers can talk to each other: notes played on one can sound on another, rhythms set up on a keyboard can play a drum machine, etc., etc. Up to 16 data channels are available. The whole shebang costs about five bucks at the manu-

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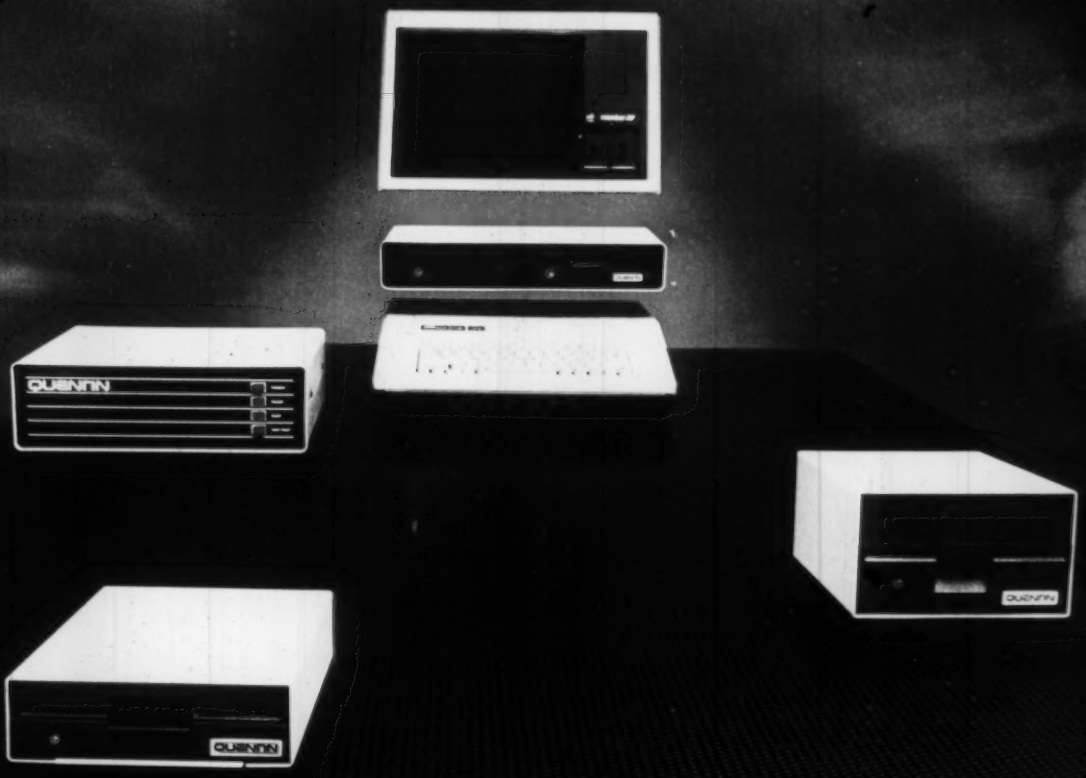

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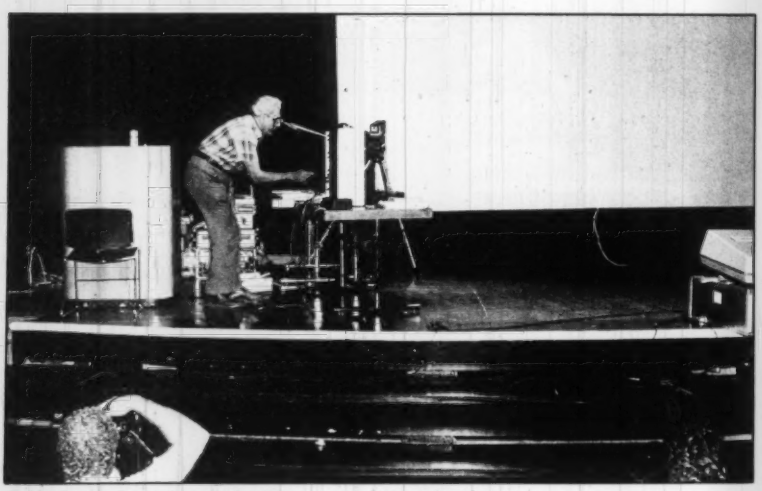


Bob Moog adjusts his synthesizer prior to lecture/performance.

facturing level, and it can be hooked up to any synthesizer that uses microprocessor control.

Half of the audience is rapt, while the other half is yawning uncontrollably. Moog is a terrible public speaker: his delivery is full of long, meaningless pauses in the middle of sentences, which are especially hard to take first thing in the morning. There will be another lecture on the subject, with a demonstration, this afternoon, so within 30 minutes half the audience, including me, sneaks out the door.

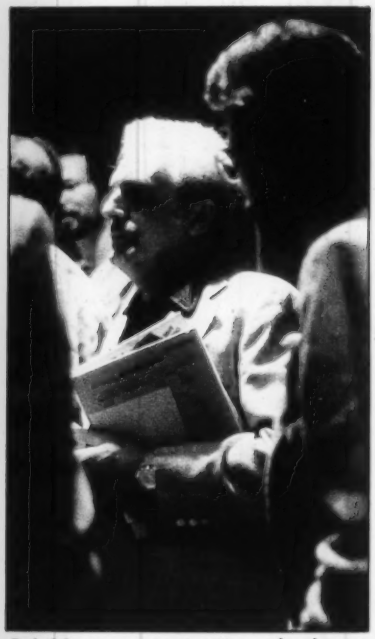
In the lobby is a wall of stunning computer paintings by David Em with titles like "Stargate," "Trans Jovian Pipeline," and "Donuts in Space." There is a mobile called "Emitter Follower" by Doug Back, which has four balsa wood sticks spinning atop an Apple with a transparent cover, usually avoiding each other, but occasionally colliding and reversing direction, and every once in a while hanging up completely. "Golden Gate Buzz" is a perfect title for a painting by D.J. Cox. It looks like a video still of the Golden Gate Bridge after it has been plugged into an electrical socket.

Back in the lecture hall, Andy Moorer is substituting for John Chowning, who unfortunately had kidney stone troubles enroute and is now lying in a hospital in Seattle. Moorer's delivery is a great contrast to Moog's: it is short, sweet, articulate, and coherent. The talk is a simple plea that in the rush to perfect the ultimate live-performance synthesizer, we should not forget the advantages of off-line synthesis. As the complexity of a composition increases, he reasons, it becomes necessary to get away from real-time synthesis, so that the composer can maintain proper control over a larger number of parameters.

Late Tuesday Morning:
Jody Gillerman Takes It Off

"Performance in Visual Media" doesn't exactly sound like a strip show, but it's about as close as this conference is going to get to anything on the prurient plane. A corner of the ballroom is filled with Jean Piché's music equipment, a mean-looking aluminum patch bay, and TV cameras, monitors, and lights. California video artist Jody Gillerman is walking around dressed in black leather and a huge red LED bracelet, and Piché shoos away a flock of photographers.

Gillerman sits down on a stool and takes off her jacket, revealing a black leotard, Piché starts playing string-like drones, punctuated by tiny explosions. A tape of computer graphics can be seen on a small video monitor and on a projection screen, and slowly the image on the larger screen starts to change. Cameraman Jim Whittaker is tightly focussing on Gillerman's neck, and the image of her caressing her bare skin starts to mix with the taped graphics. The music builds, and Piché begins to coo and sigh into a microphone. The camera angle of Gillerman is so tight that unless you can see her in the corner,



Bob Moog answers questions after lecture.

L: Jody Gillerman; R: Jean Piché preparing for performance.

it is hard to determine exactly what she is doing. It is an exciting, very sensual performance, and the audience applauds enthusiastically when it is over.

The patchbay, Piché later explains to us, is a custom image mixer that responds to incoming sound as well as its own internal program. "We rehearsed everything on headphones," he says, "so an unexpected thing happened just now—the sound coming out of the speakers was getting into the microphone and setting up an extra loop. Actually, I think it came out better."

Tuesday Afternoon:
Labanotation, More MIDI, and PODX

An addition to the schedule has been announced: choreographer Maureen McKellar and programmer Dianne Thomson are to speak in the Media Centre about computerized choreography. Actually, the lecture is little more than an apology for the previous night's dance piece. Besides the problems that always accompany a dance performance (the venue was switched at the last moment, and a suitable floor for the dancers was never installed), there were technical difficulties in the creation of the piece.

The choreography program itself was tedious: every movement of every limb had to be analyzed using an abbreviated form of Labanotation, a notoriously difficult dance-notation scheme. The only parameter it dealt with well was time. "Its applications are mostly educational," says Thomson, "such as biomechanics and hospital clinical work. A production company in L.A. is using it to analyze motion patterns of a roomful of people to help them write film scripts."

The choreography program itself was tedious: every movement of every limb had to be analyzed.

Worst of all, she explains, the computer broke down part way through the project, and she had only 60 hours at the machine to do what was her first experiment in computer choreography.

Over in the ballroom, Barry Truax introduces us to PODX, the synthesizing language he wrote for his lab at Simon Fraser University on the outskirts of Vancouver. He has a few important points to make: "The music we hear today is incredibly traditional—as if 50 years of experimental music never happened. We now have the ability to design the *process* of composition. Among the tools we can use is the incorporation of randomness in meaningful ways."

Ralph Dyck demonstrates MIDI.

One of the more interesting functions of Truax's program is developing "tendency masks": parameters *within* which random values can be generated. The boundaries can change over time, so that, for example, a piece can start out with a series of random pitches in a low octave, and gradually get higher, without sacrificing the random quality of the sound. A special application of the tendency mask is a "trajectory map," which indicates left-to-right and front-to-back location in space of a sound event.

Back at the Media Centre, the lecture hall is once again packed, this time for a MIDI demonstration by Ralph Dyck, a well-known Los Angeles studio musician (Elton John, Toto, Average White Band), and now also a designer for Roland. On stage with him are assorted synthesizers, a couple of Roland electronic pianos, and an IBM PC. In a laid back, sardonic tone, he tells us that he has been "kluging" synthesizer interfaces for years, but since each design was unique to a specific application, they were all "dead ends." MIDI, he hopes, will change all that. "What you are seeing now is already obsolete," he says. "It's slow, it has no editing capabilities, and it uses only one data channel."

For Dyck's first demonstration, he plays on the piano keyboard, but we hear the notes from one of the synthesizers. The second demo is a piece recorded on the computer and played on the piano. He won't tell us who recorded it, but after a few bars it becomes obvious: Oscar Peterson. "He's digitized," Dyck smiles. "We can analyze his playing at any time, slowing it down without changing the pitch.

"With MIDI, the producer and the synthesist can get together at home with a rough mix, and work out the voicings and the parts, and then record all of them into a microcomputer. When the musician gets into the studio, all he has to do is set up and push the start button."

With MIDI, the producer and the synthesist can get together at home with a rough mix, and work out the voicings and the parts, and then record all of them into a microcomputer.

The third demonstration manages to convince almost everybody. Dyck sets up two synthesizers, one generating brass sounds, the other strings, and instructs them to respond to key-velocity data at two different levels. He plays a chord progression on the piano, then repeats it a little louder. The brass comes in, giving the sound a nice fat character and spreading it out across the stereo image. Then he plays it again, still louder, and the strings an octave above and below soar. The audience, having just experienced a new definition for the phrase "conducting from the keyboard," quietly freaks out.

Tuesday Night: Out Of This World

The MacMillan Planetarium, across a narrow channel from downtown Vancouver, has just reopened. For the

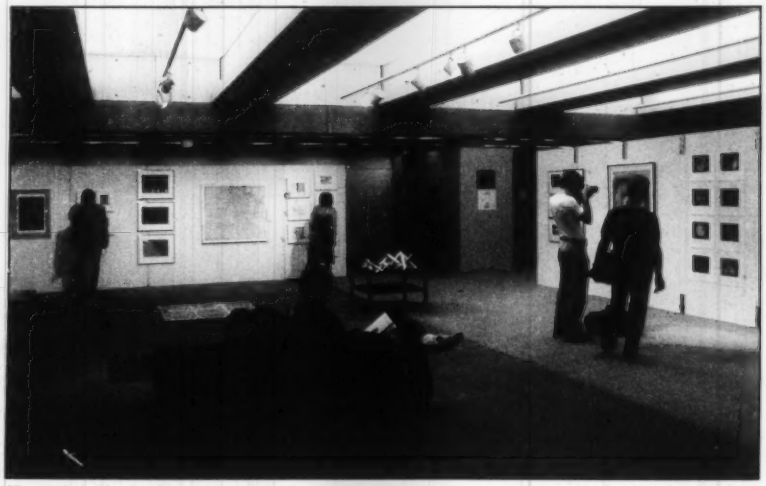
past several months, asbestos insulation was being removed, and the technical staff has taken the opportunity to redo all of the sound and visual systems. In the downstairs lounge, conference delegates line up to buy tickets for the wine-and-beer cash bar while they stuff themselves on obscenely rich (and free) cakes and chocolates. After an hour or so, the whole crowd moves upstairs for the specially commissioned planetarium show.

But the view of the sunset over the city is so spectacular, that many of us figure we can wait for the second show. The planetarium staff have pulled out a bunch of stock slides and fired up a couple of lasers, but even given the quickie-production approach, the show is pretty impressive. The first piece of music is "Phone" by the absent John Chowning, a fairly undistinguished collection of computer bleeps and bloops. The last piece, on the other hand, grabs everybody.

"Love in the Asylum," by Peter McNabb, may be the most emotionally effective piece of electronic music (computer or no) I have ever heard. String-like pulses build to a frightening climax, horrifying pseudo-human cries emanate from various corners of the dome, and the whole thing finally collapses into a beautifully crafted pseudo-calliope. This last uses no real pitches or natural sounds, as far as I can tell; rather, it recreates the *impression* you would get hearing a calliope at a great distance, but perfectly clearly—like an audio after-image. Charles Ives would be proud.

The visuals are just fine, too: green and red lasers chase each other around, patterning higher and tighter as the music builds, and then disappear, leaving a grainy, sepia-toned 360-degree image of a sleazy country carnival. Syntauri software designer Robin Jigour whispers to me in the darkness that this is not McNabb's best piece. I'm not at all sure I want to hear his best.

After the show, everyone crowds around the planetarium's new computerized image console, and the operator, obviously delighted at the attention, launches into a zippy dissertation on its workings.



Contributed art show.

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Wednesday Morning:
Gourmet Food For Thought

The program promises "When is it art, and what is technology doing to it?" certainly a question for the ages. First up is Chicago graphic artist Joan Truckenbrod, who gives us an overview of the state of computer graphics. It is important, she says, for artists to "fool the systems—to keep a perspective beyond what the machinery can do." She also notes that "absorbing the character of the system—like jaggies, color changes on film, Xerox distortions—can help determine structural elements."

The next speaker is composer Herbert Brün who, after 20 years in the field, is one of the undisputed fathers of computer music. Brün speaks with a thick German accent, but his command of language is described by one observer as "way beyond English." The way he uses his adopted tongue is highly reminiscent of Victor Borge—full of outrageous puns, bitter irony, and wild similes—but unlike that Great Dane, this man is dead serious.

"With most compositional systems," he contends, "it's difficult to avoid drones, sequences, and infinite loops. Music V (a popular mainframe composition program) is ingenious, but it helps to perpetuate existing compositional techniques, which are obsolete."

In the process of creating an alternative, he decided "People who are always squeaky-cleaning never see the message written in the dust." Therefore, he named his new composing language "Sawdust."

"I don't like sentences like 'You're late, Herbert,' or 'I told you so,'" he proclaims. "I can't shoot the people who say them, so I decided to bury the phrases alive; musicologists won't touch anything that's buried alive." He proceeds to play a piece composed with Sawdust called "I Told You So," which consists of little FM-like struc-

The contributed art show. At right, computer-designed tapestry by Joan Truckenbrod.

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Graphics playroom.

tures that follow the spoken pattern of that hated phrase. Unfortunately, the sound system is breaking up something fierce, so he stops the tape. "Some other time," he mutters.

He is not done. The audience fires questions at him, like "What about aesthetics?" "Aesthetics is the listener liking himself in the presence of art," he rejoins. " 'I didn't like myself while I was listening to your piece' is the beginning of a worthwhile discussion. 'Your piece is lousy' is not."

David Em, traveller on the Trans Jovian Pipeline, *et al,* talks about "demystifying and demythifying" the computer. "It's not that the technology is not available for 'organic' art," he says, "it's more a consideration of who's been using it—mostly engineers building bridges.

"The computer is good at grids, radials, and replication. It's like The Force: it controls you, but obeys your commands. Ten years ago, I never thought that in 1983 I'd be playing with grids."

Wednesday Afternoon: Ending With A Whimper

In the Cinema at the Media Centre, Bob Moog is giving a brief history of control devices for electronic instruments. "Leon Theremin experimented with different control devices," he says. "The sound-producing circuits were not as important as the electromechanical devices used to control them. He devised a dance platform whose capacitance varied with how much of the dancer's body was on the floor. Unfortunately, he couldn't find any dancers who could 'carry a tune,' and Theremin players were not a graceful bunch. Apparently, the only performance was by Clara Rockmore, who played *Ave Maria* by standing up and sitting down."

He then talks about his current work. "By the late '70s," he says, "the big guys had gone into making synthesizers. We didn't want to go head-to-head with them, so we picked a small corner of the market: gesture controllers."

The computer is good at grids, radials, and replication. It's like The Force: it controls you, but obeys your commands.

He shows a Trazer: a cursor controller that responds to finger position on a tablet. He has been working, he says, on putting such a controller on each key of a keyboard. "It's as close as you can think of to using all of the functions of the finger: it's sensitive to left-to-right, front-to-back, and up-and-down position, as well as the force of the motion." The scanning program for the keyboard is so complex, he says, that so far the largest working model he has made has only eight keys.

Bill Buxton then offers the opinion that the only way to get support for new music systems is to call them something else. On a remarkably amateurishly produced videotape he makes the case for Drum, his touch tablet that refused to cooperate Monday night. On the tape he discusses only home computer, industrial, and engineering applications, not music.

Rensselaer Polytechnic Institute video freak Tom DeWitt follows, discussing a system that generates images with live action. Dancers on a stage wear small infrared generators whose motion is picked up and processed by fixed sensors. A variation on it called "Painter Power," written for the Apple, lets the movement of the dancer control the *direction* of movement of video brush strokes, the character of which are predetermined by an artist.

It is this last program that we get to see in action. A dancer flits around the stage, while thick colored lines fill a large projection screen behind her. Moog and Buxton make weird noises on their various devices, which all seem to be working for a change. It is all terribly avant-garde, but not very interesting.

Epilogue

And so Digicon comes to a close. Although Cindy Noakes is exhausted, and although she says the attendance figures didn't fulfill her "dream scenario," she is mightily pleased.

"Art and music people were talking to each other," she says. "I heard someone say, 'Boy, I would have stayed on the same track the rest of my life if I hadn't met the guy sitting next to me.' " And of course, that is what it is all about. Computer artists and musicians are a solitary bunch, and any opportunity for them to come out of their basement laboratories and see what everyone else is doing is welcome. "I don't know if Vancouver was ready for this," she says. "But this one won't be the last. And we can't see giving it over to somebody else to do—that's like giving away your baby." A few weeks after it is all over, she calls me to announce that Digicon II will take place in Vancouver, in August, 1985. She makes me promise to show up.

And I'm pretty tired too. Now I go home and digest 100 pages of notes, no doubt exhausting the capacity of my word processor. I also have some ideas about tricking my AlphaSyntauri into making sounds it is not supposed to be able to. But first, I think I'll head for those mountains. END

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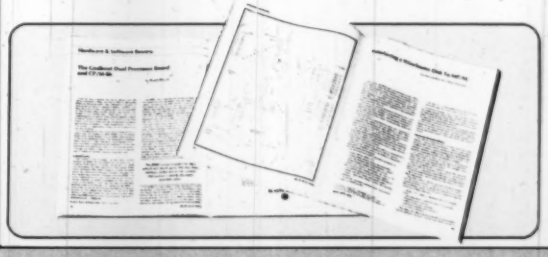

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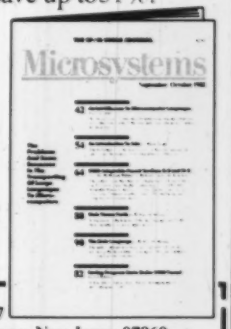

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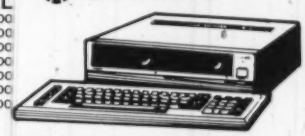

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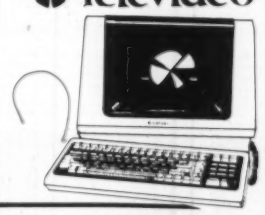

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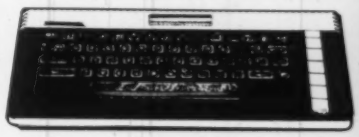

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CIRCLE 119 ON READER SERVICE CARD

The CBasic Clinic

Part Six

John A. Libertine

This will be the last in our series for *Creative Computing.* It is my hope that you will have reached the stage where CBasic is no longer intimidating and that you can continue on to bigger and better things on your own. With your documentation and with *CBasic User Guide,* you should be able to attack the more advanced features of this fine language. It does take patience and determination, but the results will be well worth the effort. For some, there may well be no reason ever to consider another language. Among the most regular users of CBasic are professional business programmers. For all but the compulsive acquirer of software, CBasic might well do all you require and more.

Our program this month will introduce a few new concepts and recapitulate much of what we have already learned. It is a very practical and usable program. I use it myself for "quick and dirty" small lists to be printed out with *WordStar* and *MailMerge* when it doesn't make sense to set-up *dBase II* or *DataStar.* Since it is a simple, functional program, don't look for sophistication or state of the art. It works and works well. It can be an educational experience. In no way should you think this is the ultimate in CBasic programming!

The Menu

Let's start by introducing the *menu* concept. You have seen it used in commercial programs many times. At the start, you are given several choices. You choose what you want to do from a menu displayed on the console. Our program this month starts off with such a menu. Take a look at the beginning of MAILLIST.BAS in Listing 1.

Before the menu display, we have a simple title screen. Then there are a couple of very important preliminary lines. One dimensions a string variable (A$) as an array with seven subscripts. (Review the last session for details on arrays.) This will be used for the seven strings (each a *field*) in a single record (name, salutation, four address lines, and a telephone number). The next line assigns a filename. Putting this assignment at the start of a program makes it easier if you decide to change the filename in the future. In my own version, I allow the user to name the file at the outset as part of the program. You might consider this possibility yourself. You should now have enough background to be able to do it several different ways.

Simply listing a menu is extremely easy, of course. The first decision you must make is *how* to implement the user's choice. You have such possibilities as using GOTO or GOSUB statements or the ON XX GOTO variation. You could call up subroutines or user-defined functions. These and other possibilities exist.

The first decision you must make is how to implement the user's choice.

As has been true all along, the solution used here is simple and straightforward. Let me repeat that none of the programs we have discussed in the "Clinic" are very sophisticated or elaborate. The purpose is to get you started in CBasic, not to explore the ultimates. That will come only with time and practice.

The user is asked to enter 1, 2, 3, or 4. If a number higher than four or lower than one is entered, the program goes back and enters the menu choices again. This is a simple "error trap." As you progress, try to insert error traps frequently. You don't want a user to go off into a never-never world that eventually spews out garbage or crashes a program. Remember, it takes only a few minutes to write in an error trap which could save hours and hours of frustration or worse for the user.

You will notice that choices 3 and 4 will result in the program being diverted to lines 3000 and 4000. If *either* 1 or 2 is chosen, the program continues along the main path. As this program exists for my own use, 1 and 2 will also go to specific subroutines; however, I am trying to keep this a little simpler and shorter so the differences between 1 and 2 do not become apparent until later. In any case, choice 1 or 2 will result in the program continuing along the main road. Okay, let's follow along for choice 1 or 2.

The first line initializes the counting variable (Count%) to zero. Then the next two lines open a file. We are assuming (whenever a file is opened) that the file exists on disk. Here we expect there will be a file named MAIL.FIL on the currently logged disk (probably A disk). If the file is on the B disk and that is *not* the logged disk, then change the filename to B:MAIL.FIL.

The IF END line just above the OPEN line is very important if the file is *not* on the disk. The statement will find the end of the file if there is no file in existence. It is handy to understand this concept. If a file exists, the IF END statement will execute only when and if the last field in the last record is read (i.e., when the program tries to read a field and there is nothing there).

However, if a file does *not* exist, there

is nothing to read (including the filename itself) from the very start. This will cause the IF END statement to execute immediately. In this specific case, if a file does not exist, the IF END statement causes the program to divert to line 10.1. This is the direction we want for choice 1. (start new file).

Notice that if the file *does* exist, the program will go to line 10.2 which reads the file into memory. In between, you will see a line that catches the possibility that choice 1 results in opening an existing file. If that happens, the program goes to a subroutine which prints a warning that a file already exists. The user can then proceed to add names to that file or abort the program. This is another error trap of sorts. Without it, a user could be adding to a file instead of opening a new one. This could be an embarrassing if not serious blunder.

At any rate, one of two things will happen here. Either the program will open an existing file and read to the end, or a new file will be created. In either case, we are now ready to enter new data into the file.

The Input Section

You should be able to follow this part of the program easily by now. If you experience difficulties, go back to the last couple of sessions and re-read the sections on file handling. We come next to the input section, which asks for names, addresses, etc. Note that there are four lines available for the address portion. In my program, there are three address lines plus a company line since 99% of my lists are business-oriented. You might consider using this format as well. (Just substitute "Enter Company Name" for "Enter Address line #1".)

There is a very simple but vital instruction given regarding these four lines. Note "If all four not needed, type return to skip." Your whole program could blow up if you do not allow for the fact that some inputs will have no data. Here a simple RETURN or ENTER will skip the input. This works here because we are using the LINE INPUT format. This puts a "null string" (a string that has no characters in it) into the data file. It usually shows up in the file as two quotation marks not separated by a space (""). In some sequential files which do not use the LINE INPUT statement, a null string would be represented by two commas not separated by a space (,,). There are other ways to accomplish the same result.

For example, you could ask for a special coded input such as a little-used character (a percent sign or caret perhaps) to indicate no input. This requires picking up that character in the output portion of the program and then changing it to a blank line or space or no space at all as may be necessary. This type of input/output is more likely to be used if the data are mostly alphanumeric.

For numerical inputs, you can use a specific number which you know will not be entered under normal circumstances (99999 or zero for example). The technique used here is easier but is only efficient if your inputs are all strings rather than numbers and the size of your file is relatively short.

Bear in mind that this type of input makes up a file in which each record consists of only one field. That is because each LINE INPUT is sent to the file as a complete line ending with a carriage return. That tells the computer you have reached the end of a record. In our program, that means each complete entry takes up seven records (seven separate lines) in the file.

For long files, that is not very efficient in the use of disk space. For up to about a couple of hundred names and addresses, you will not notice any slowdown in program execution or any great increase in the file size; but at some point it will begin to effect both of these factors.

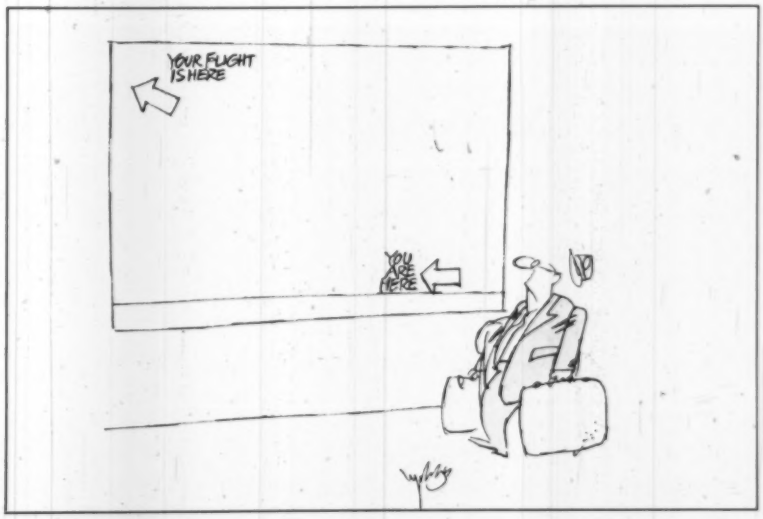
As each entry is completed, a "mini menu" appears at the bottom of the screen asking the user to proofread the entry and indicate what action to take next. If the entry is incorrect, entering a caret will allow him to re-do it. If it is correct, the user chooses to continue with the next entry or end the input if all names have been entered. You will probably use this technique in many programs. Just be sure your program addresses each choice in a logical order (not necessarily the way it is listed in the choice list!).

Your whole program could blow up if you do not allow for the fact that some inputs will have no data.

For example, in this program we first want to address the problem of an entry which has an error. We certainly do not in this case want the wrong inputs read into a file. So the first action is to catch the caret response and send the program back for re-entry. If we get by this line, we then have a simple read to a file of the seven entries (using a FOR/NEXT loop).

Immediately under this is a line that adds to the count of names. And immediately under that is the line which catches an F entry indicating that the user is finished with the input. (Be sure your program adds to the count and reads to the file *before* the F entry sends the program to STOP.) But if neither the caret nor F has been entered, the program continues to the next line, which sends us back to line 10 where we begin the next input. This continues until the user indicates he is finished (with an F entry). That gets us to line 1000 which closes the file.

At this point, the user is given a count of the names in the file and asked whether he wants to go back to the main menu or if he is through with the program. You can easily follow the logic here, I am sure. Just remember that the STOP line brings the program to an end. In some Basics, a STOP can be



overridden—not in CBasic. STOP and END both unequivocally bring everything to a complete halt, end the program, close all files, and return the user to the operating system (CP/M).

The Printout

However, let's go back to the main menu (or we could assume the user is bringing up the program from scratch). We still have two choices on the main menu to follow through. Let's take choice 3 (printout file on paper) first. You recall that that leads the program to line 3000, which brings up some instructions on the screen (be sure printer is ready, paper inserted, etc.) As you can see, before we can print a file, we must open it. We then proceed to read the first record.

We now have seven fields in memory. The LPRINTER statement says everything that follows goes to the printer instead of the terminal (console). So we simply tell the printer to print each field on a line by itself. The printout would look like this:

John J. Jones
Jack
XYZ Company, Inc.
100 Main Street
Anytown, MA 10000
(blank line here)
(617) 123-4567

In some Basics, a stop can be overridden—not in CBasic.

Note the blank line between the city/state and telephone number. Had we entered four address lines instead of three, the blank line would not appear. You can, by the way, program your output to eliminate blank lines like this. Essentially, you would say: IF A$(6) = "" THEN PRINT A$(7) INSTEAD. This is *not* the exact code you would have to use. See if you can figure it out for yourself.

You could program this to print out two columns, three columns, or whatever if you want to. If you want to try this, remember that you must read out as many records as there will be columns. Think about that. It also means that you will have to assign additional sets of variables. You will have to do something like read seven fields and assign each of the variables to another set like this: Column.one.name$=A$(1); Column.one.address1$=A$(2), etc. Then you read the second record and do the same (changing column.one to column.two) and so forth for the number of columns you want.

To simplify, let's say the new variables will be Cn (where C stands for column and n, for the column number) plus a number from one to seven for each variable. For a three-column printout, visualize the variables like this:

C11$ C21$ C31$
C12$ C22$ C32$
C13$ C23$ C33$

and so forth up to:

C17$ C27$ C37$

Listing 1.

Listing of MAILLIST.BAS

```
GOSUB 10000  REM Clear screen

PRINT "         THIS IS A SIMPLE ENTRY PROGRAM FOR"
PRINT
PRINT "              NAMES, ADDRESSES ETC."
PRINT
PRINT "            FOR BUSINESS OR HOME USE."
PRINT:PRINT:PRINT:PRINT
PRINT "          Copyright 1983, John A. Libertine"
PRINT:PRINT:PRINT
INPUT "HIT <RETURN> TO START:";LINE DUMMY$
DIM A$(7)   REM Dimension array "A$" for 7 subscripts
FILENAME$="MAIL.FIL"   REM assign filename to variable
5 GOSUB 10000
PRINT "************************************************************"
PRINT
PRINT "                          M E N U "
PRINT:PRINT
11 PRINT "             Choose ONE of the following:"
PRINT:PRINT
PRINT "   1. Start NEW FILE"
PRINT
PRINT "   2. ADD to existing file"
PRINT
PRINT "   3. PRINTOUT file on standard letterhead size paper"
PRINT
PRINT "   4. Print ENVELOPES from list (WITHOUT phone numbers)"
PRINT
PRINT "************************************************************"
PRINT:PRINT
INPUT "Enter 1 or 2 or 3 or 4 then <Return>";CHOICE%
IF CHOICE% > 4 OR CHOICE% < 1 THEN GOTO 11
IF CHOICE%=3 THEN GOTO 3000
IF CHOICE%=4 THEN GOTO 4000
REM If choice% = 1 or 2, program continues below
COUNT% = 0   REM Initialize count loop
IF END #1 THEN 10.1  REM If file does not exist, create it
OPEN FILENAME$ AS 1
IF CHOICE%=1 THEN GOSUB 11000  REM If file exists print warning
GOTO 10.2
10.1 GOSUB 10000
PRINT "*** NO file of names & addresses found. ***"
PRINT:PRINT
PRINT "    Proceeding for start of new file"
PRINT " unless you abort program by typing 'Control-C'"
PRINT:PRINT
INPUT "  Type <Return> to start";LINE DUMMY$
CREATE FILENAME$ AS 1
10.2 IF END #1 THEN 10   REM If file is read to end, go to input section
                  REM Next line reads first record.

20 FOR I%=1 TO 7
READ #1;A$(I%)
NEXT I%
COUNT% = COUNT% + 1
GOTO 20     REM FIND END OF FILE

10 GOSUB 10000  REM Clear Screen
PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
INPUT "Enter Full name:";LINE A$(1)
PRINT
PRINT "You can now enter a first name or nickname for use"
PRINT "in a salutation (Example: Jack).  Do NOT type 'Dear'"
PRINT
INPUT "Enter Salutation:";LINE A$(2)
PRINT
PRINT "FOUR lines are available for address."
PRINT "If all four not needed, type <return> to skip."
INPUT "Enter Address line #1:";LINE A$(3)
INPUT "Enter Address line #2:";LINE A$(4)
INPUT "Enter Address line #3:";LINE A$(5)
INPUT "Enter Address line #4:";LINE A$(6)
```

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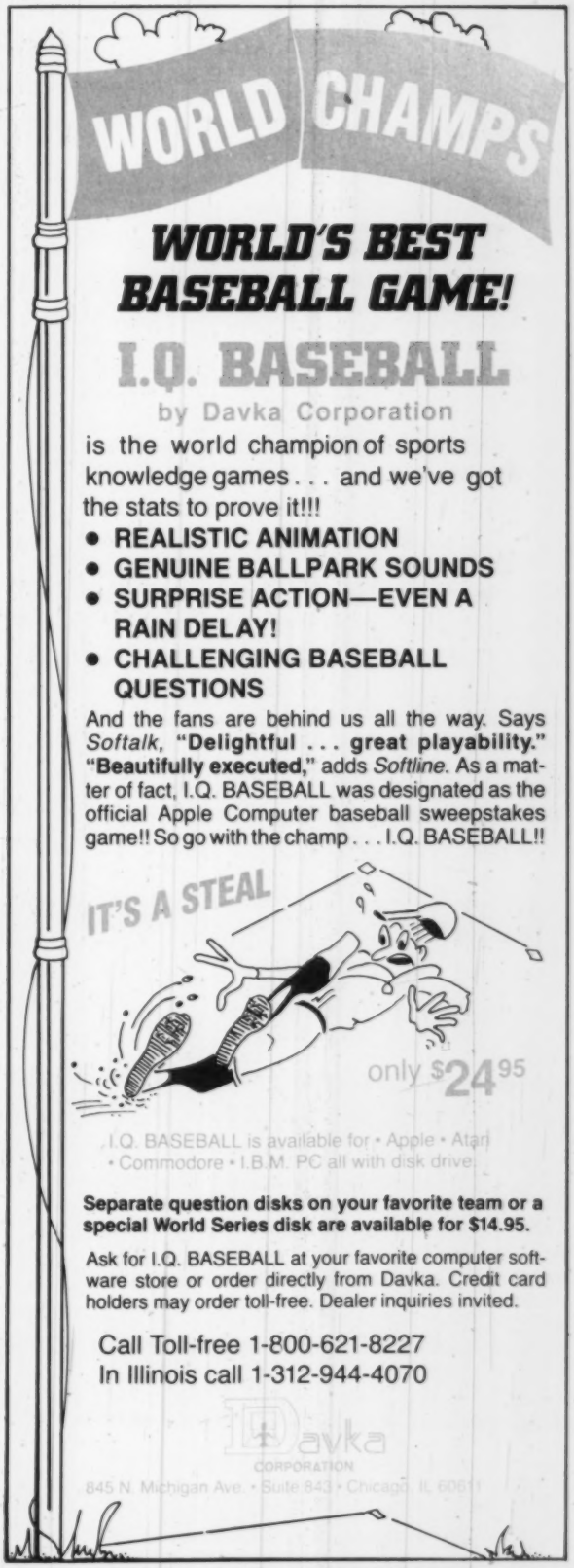

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You could also do this with a two-dimensional array if you want to get fancy.

Once you have all this, you can print a line at a time. Using the TAB function or the PRINT USING format, you will print column.one.name$, then two, and so forth. The next line will print the salutation (or whatever you specify)—again column-by-column. Since you have seven variables, you will need seven times the number of columns as a total for the column variables. A three-column printout, then, would require 21 of these variables. This all sounds far more confusing than it is. Just think about it a while (or better still try it), and it should come.

Note that the messages after the printout should appear on the screen rather than on the printer. To make this possible, we use the CONSOLE statement on a line by itself. This cancels the LPRINTER instruction and redirects readouts to the screen. Recall that LPRINTER and CONSOLE statements must occupy lines by themselves.

If you neglect to read all seven variables, the program will do crazy things.

Envelopes

After a printout, the user again opts to end the session or to go back to the main menu. Let's assume he goes back and chooses option 4 (print envelopes). Take a look at the routine beginning at line 4000. This is very similar to the printout we just went through. There are a couple of major differences, however.

To begin with, we will *not* print the salutation or the phone number on an envelope. Be careful, however. You must read out all the variables including these two. Just don't call for them in the actual printout. If you neglect to read all seven variables, the program will do crazy things. For example, if you read only five variables (regardless of what you call them) you will simply get the first five variables. When you go to read the next five, the first two will actually be variables six and seven of the previous record.

The only other difference is in the formatting of the output to fit on an envelope. Note that the spacing, etc. in the program may have to be adjusted to fit your printer and/or envelopes. Of course, you will also have to make

```
PRINT
INPUT "Area Code & Telephone number";LINE A$(7)
PRINT
PRINT " ****PROOFREAD ABOVE CAREFULLY!!! ****"
PRINT
PRINT "1.  TO RE-DO, ENTER A CARET (^) THEN <RETURN>"
PRINT "2.  If okay, and more names to do, enter <RETURN> only"
PRINT "3.  IF FINISHED WITH ALL NAMES,"
INPUT "    enter 'F' (for Finished) and <RETURN>";LINE ENTER$
IF ENTER$="^" THEN GOTO 10

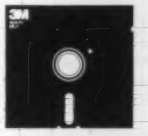
FOR I%=1 TO 7
PRINT #1;A$(I%)
NEXT I%
COUNT% = COUNT% + 1
IF UCASE$(ENTER$) = "F" THEN GOTO 1000
GOTO 10

1000 CLOSE 1
GOSUB 10000
PRINT:PRINT:PRINT:PRINT:PRINT
PRINT "THERE ARE ";COUNT%;" NAMES IN THIS FILE NOW."
PRINT:PRINT:PRINT
PRINT "To return to main menu, type 'GO' then <return> or"
INPUT "type <return> only to end program";LINE DUMMY$
IF UCASE$(DUMMY$)="GO" THEN GOTO 5
STOP

10000 REM CLEAR SCREEN SUBROUTINE
FOR I%=1 TO 25
PRINT
NEXT I%
RETURN
11000 GOSUB 10000
PRINT "        ****** W A R N I N G !!! *******"
PRINT
PRINT " A FILE EXISTS.  IF YOU PROCEED, YOU WILL BE "
PRINT " ADDING NAMES TO AN EXISTING FILE"
PRINT
PRINT "IF THIS IS REALLY WHAT YOU WANT, ENTER <RETURN>"
PRINT
PRINT "IF WHAT YOU WANTED WAS TO START A NEW FILE, YOU MUST"
PRINT "EXIT THIS PROGRAM AND USE A NEW DISK OR RE-NAME THE"
PRINT "EXISTING FILE"
PRINT:PRINT
PRINT "TO EXIT PROGRAM, ENTER THE LETTER 'E' THEN <RETURN>"
INPUT LINE CORRECT$
IF CORRECT$="" THEN GOTO 11001
CLOSE 1
STOP
11001 RETURN

3000 GOSUB 10000
PRINT "BE SURE PRINTER IS READY AND PAPER INSERTED."
PRINT
PRINT "USE ROLL PAPER OR FAN-FOLD.  PRINTOUT WILL NOT"
PRINT
PRINT "STOP BETWEEN PAGES"
PRINT
INPUT "TYPE <RETURN> TO PRINT NOW";LINE DUMMY$
IF END #1 THEN 3001
OPEN FILENAME$ AS 1
COUNT% = 0
3002 FOR I%=1 TO 7
READ #1;A$(I%)
NEXT I%
LPRINTER
PRINT A$(1):PRINT A$(2):PRINT A$(3):PRINT A$(4):PRINT A$(5)
PRINT A$(6):PRINT A$(7)
PRINT
COUNT% = COUNT% + 1
GOTO 3002 REM Keep printing till end of file
3001 CLOSE 1
CONSOLE
GOSUB 10000
PRINT "END OF PRINTOUT"
PRINT
PRINT "A TOTAL OF ";COUNT%;" NAMES PRINTED"
PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
PRINT "To return to main menu, type 'GO' then <return> or"
INPUT "type <return> only to end program";LINE DUMMY$
IF UCASE$(DUMMY$)="GO" THEN GOTO 5
STOP

4000 GOSUB 10000
PRINT "You are going to printout on ENVELOPES.  You will have"
PRINT "to experiment as to the placement of the envelopes both"
```



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allowances to stop printing so you can insert a new envelope after each printout (unless you happen to have continuous form envelopes). Other than this, the sheet and envelope printouts are essentially the same.

Well, we have reached the end of "The CBasic Clinic." You obviously are not an expert programmer after these six sessions. You should, however, have gotten to the point where you can understand the fundamentals of working with CBasic. You should now be able to start with your documentation (or better still with *CBasic User Guide*) and get into the advanced functions and statements. Becoming a good programmer is not so much a matter of education as it is of determination to stick to it, think it through, and, above all, use your head.

If you have a problem, let me assure you that 99.9% of the time it is simply because you have made an error. Every programmer, neophyte or expert, has sat for hours trying to find the source of a stupid mistake. Eventually, it turns out to be something silly and obvious. Of course, it is obvious only *after* you find the error. If you approach CBasic with the idea that it is a challenge which can be fun, you will probably succeed. In fact, I can almost guarantee that you will succeed.

```
PRINT "vertically and horizontally in your printer"
PRINT
PRINT "When your first envelope is ready, type <Return>.  One"
PRINT "envelope will print.  You will then be prompted to place"
PRINT "another envelope in your printer and enter <Return> again."
PRINT "This will continue until all names are printed."
PRINT
PRINT "***BE SURE PRINTER IS READY AND FIRST ENVELOPE INSERTED"
PRINT
INPUT "     ENTER <RETURN> TO PRINT NOW";LINE DUMMY$

IF END #1 THEN 4001
OPEN FILENAME$ AS 1
COUNT%=0
4002 FOR I%=1 TO 7
READ #1;A$(I%)
NEXT I%
LPRINTER
PRINT TAB(40);A$(1)          REM Note 'TAB(40)' may have to be changed
PRINT TAB(40);A$(3)          REM for your printer.  Also note the salu-
PRINT TAB(40);A$(4)          REM tation and tel. number "A$(2)" and
PRINT TAB(40);A$(5)          REM "A$(7)" do NOT printout on envelopes
PRINT TAB(40);A$(6)
PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT    REM These print
COUNT%=COUNT%+1                                    REM lines force
                                              REM envelope out of printer

CONSOLE
GOSUB 10000
PRINT "Insert new envelope then type <return>"
PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
INPUT LINE DUMMY$
GOTO 4002  REM continue to print to end of file
4001 CLOSE 1
CONSOLE
GOSUB 10000
PRINT "PRINTOUT COMPLETE. ";COUNT%;"ENVELOPES PRINTED"
PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
PRINT "To return to Main Menu, type 'GO' plus <return> or"
INPUT "type <return> only to end program";LINE Dummy$
IF UCASE$(DUMMY$)="GO" THEN GOTO 5
END
```


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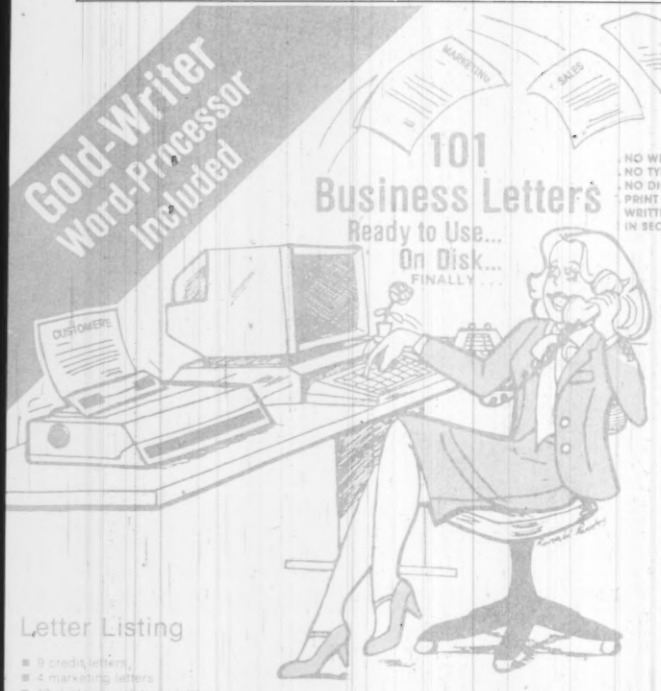

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CENTIPEDE	$27.95		$29.75	CENTIPEDE	$27.95
KOALA TOUCH TABLET	$99.75	KOALA TOUCH TABLET	$69.75	KOALA TOUCH TABLET	$84.75
DEADLINE	$34.75		$34.75		$34.75
ENCHANTER	$34.75		$34.75		$34.75
INFIDEL	$34.75		$34.75		$34.75
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STAR CROSS	$34.75		$34.75		$34.75
SUSPENDED	$34.75		$34.75		$34.75
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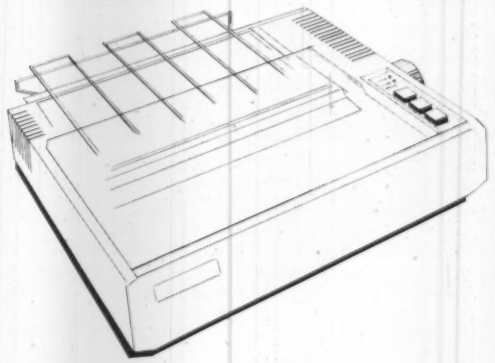
CIRCLE 164 ON READER SERVICE CARD



Print About Printers

John J. Anderson

Hey there folks. Printers to the left of me. Printers to the right of me. Everywhere I look, printers. My thumbs are black from handling ribbons. My wastebaskets are brimming with fanfold paper. My mind is swimming with DIP switch settings. And I might as well admit it, I love it. Ah, the smell of re-inkers in the morning.

Lots to put in print this time around, and little space in which to get it printed. First, a suggestion from a reader, Robert Hood, of Bremerton, WA, for Epson FX-80 owners.

Feeding Your FX-80

"In the January 1984 column you complained about the difficulty of loading paper in the Epson FX-80. You are quite right, it isn't easy. But it can be made easier.

"Note that the top of the printer case has raised bars under the paper as it is fed into the printer. For single sheets and roll paper place a $\frac{1}{16}$" wide black pinstripe (I used pinstriping tape for customizing automobile trim) on the fourth bar in from the left and right edges of the printer. Then you can squarely load single sheet or roll paper as follows:

"1. Raise printer cover and open paper tear bar.

"2. Unlock friction paper feed lever.

"3. Raise separator and insert paper using pinstripes as a guide to assure that insertion is perpendicular to platen.

"4. When resistance to paper insertion is met, lock friction feed.

"5. Advance paper feed knob as necessary to complete loading.

"For pin feed paper, first take some time to load paper the usual (hard) way. Then check to be sure that printed text is registered properly and the paper is not binding. Next, make a mark at one end of the paper feed holes under the separator about 3" from the hinge. Using this hole as a guide, make a circular dot on the printer case with a colored ink pen.

"Advance the paper one space using the power line feed, and using the same paper feed hole and a different color ink, make a second dot on the case. Advance paper again and make a third color dot. Pin feed paper can now be loaded as follows:

"1. Raise printer cover and open paper tear bar.

"2. Unlock friction feed lever.

"3. Raise separator and insert paper.

"4. While sliding paper into printer be sure that the colored dots appear in the holes.

"5. When paper can be inserted no farther, hold paper firmly against platen and use feed knob to complete loading.

"A note of caution—do not then change the location of the sprocket pins as the colored dots will no longer be in alignment with the sprocket.

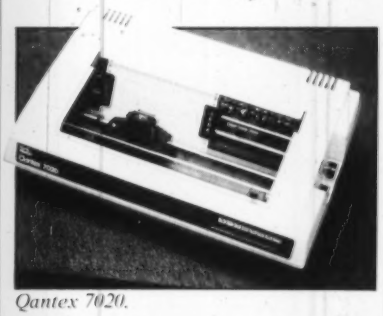
"The three different color dots also provide the following feature: lines of text can be printed closer to the top of the page by noting which color dot appears in the pin feed hole."

Thanks, Robert. Sounds like a simple but effective solution to a nagging problem. I just wish that Epson had solved that problem in the design stage. It seems to me that Epson printers, which are otherwise extremely well-designed machines, are in general among the very hardest to load. It's a shame.

Qantex Revisited

In my first printer roundup, which appeared in the March 1983 issue of *Creative Computing*, I evaluated 13 printers in a side-by-side comparison. One of the tippy-top printers I rated back then was the Qantex 7030. It made many of the other printers we tested look like toys.

At 42 lbs, it nearly gave me a hernia, but its quality was evident. More metal used in construction than just about any other machine you're apt to see. Sturdy, quiet, built for heavy use. In my review, I said "if you are looking for speed and high quality print in a high quality printer, look no further. The Qantex is exactly what you are looking for, assuming you can afford it. And it's made in the USA. It gets three stars. It will get another when it drops $400 in list price."



Qantex 7020.

Well it is time for an update. First of all, the list price of the 7030 has dropped from $1995 to $1695; that $300 gets Qantex $\frac{3}{4}$ of that fourth star. And

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- Includes double density CP/M 2.2.

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ATR8000 s CP/M display is 80 columns wide with a moveable 40 column window. All 80 columns are displayed at once on a B&W TV or a monitor with AUTOTERM80, $29.95.

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CIRCLE 305 ON READER SERVICE CARD

So what is the difference between the models? The 7020 has a 180 cps draft mode, with quite tolerable print quality. Both machines have 150 cps modes. The 7020 has near-letter-quality in a 75 cps "memo" mode, with serifs.

Qantex 7020 at 180 cps.

So what is the difference between the models? The 7020 has a 180 cps draft mode, with quite tolerable print quality. Both machines have 150 cps modes. The 7020 has near-letter-quality in a 75 cps "memo" mode, with serifs.

Qantex 7020 at 150 cps.

So what is the difference between the models? The 7020 has a 180 cps draft mode, with quite tolerable print quality. Both machines have 150 cps modes. The 7020 has near-letter-quality in a 75 cps "memo" mode, with serifs.

Qantex 7020 at 75 cps.

```
COPYRIGHT 1983 QANTEX, NAI
STATUS REPORT: (ON-LINE) TO CONTINUE


RAM TEST:..... PASS
ROM TEST:..... PASS
EAROM:........ NOT INSTALLED
PRINT MODE:... NAI-CODE
SPEED:........ ONE PASS WP
PITCH:........ 10
FOREIGN FONT:. USA
INTERFACE:.... PARALLEL
BAUD RATE:.... 110
DATA BITS:.... 7
STOP BITS:.... 1
PARITY:....... NONE
PROTOCOL:..... PARALLEL
NEW LINE:..... OFF
PROP. SPAC.:.. OFF
JUSTIF.:...... OFF
AUTO LF:...... OFF
LONG LINE:.... WRAP
PAPER WIDTH:.. 13.6
LINES PER INCH:. 6
EXT. QUE.:.... YES
ROM VERSION:.. B
MEMORY (K):... 06
FORM LEN:..... 66
LEFT MARG:.... 01
RIGHT MARG:... 136
TOP MARG:..... 01
BOTTOM MARG:.. 66
ALT. FONT ROM:. 00
HORIZ. TABS:.. 09  17  25  33  41  49  57  65  73  81  89  97
               105 113 121 129 137 145 153 161 169 177 185 193
               201 209 217 225 233 241 249
VERT. TABS:... 07  13  19  25  31  37  43  49  55  61  67  73
               79  85  91  97 103 109 115 121 127 133 139 145
               151 157 163 169 175 181 187 193 199 205 211 217
               223 229 235 241 247 253
U58 COURIER    ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ `abcdefghijklmnopqrstuvwxyz{|}
```

Qantex qualifies as a smart printer, and prints out a report of its condition at the press of a button.

Qantex has released a new unit, called the 7020. While it is a downgrade of sorts from the earlier model, it has all the solidity of its more advanced cousin, and lists for $1495.

And that's not all. My major reservation about the Qantex upon initial review was that it could not handle friction-feed single sheets—which in a top-of-the-line machine seemed to amount to a major oversight. Well Qantex has made available an inexpensive friction-feed retrofit. One of our ad reps stopped over with his own 7030, and we had the friction assembly up and running in under 30 minutes. And that was without the proper tools. I certainly hope the friction tractors will become standard equipment on all future Qantex machines.

With friction feed at $1695, the 7030 gets its full four stars. And after some time with the 7020, I can rate it just as highly. The only feature it is missing is dual-pass letter quality mode—otherwise the printers are very similar.

For example, they are both built like tanks. Both Qantex models offer parallel and serial connectors on the rear panel, in standard configuration. Both have DIP switches easy to reach and program, including configuration information on printed plates near the DIPs themselves. Paper can be loaded from the front or the bottom, and the cartridge ribbon is a snap to change. Both machines not only self-test, but can generate a diagnostic and status report, to tell you how they are currently set.

So what is the difference between the models? The 7020 has a 180 cps draft mode with quite tolerable print quality. Both machines have 150 cps modes. The 7020 has near-letter-quality in a 75 cps "memo" mode, with serifs. However, it does *not* sport the 37 cps dual-pass letter-quality mode of the 7030. I miss that font sorely in the 7020. For my $200, it is worth stepping up to the 7030. However, if you already have a daisywheel or no need for impeccable, state-of-the-art dot matrix, the 7020 will be fine for you.

Both machines can handle graphics and print bar code. And both are fully programmable through software. They can handle paper up to 15" in width in five pitches.

THE BUFFER DID IT.

Who Stole The 1500 Letters From The Computer?

Let's just say you've got to send a letter to 1500 different people. Would you like to spend 22.5 hours* or 60 seconds of computer time?

With a garden-variety buffer, the computer has to mix, merge and send 1500 addresses and 1500 letters to the buffer. Trouble is, most buffers only store about 32 letters. So after 32 letters, the computer's down until the printer's done. Altogether, you're talking 22.5 hours.

In the case of our new (not to mention amazing) ShuffleBuffer, computer time is 60 seconds flat. Just give ShuffleBuffer one form letter and your address list, and it takes care of the mixing, the merging, and the printing. But that's not all ShuffleBuffer's stolen from the computer. Oh, no.

Who Changed and Rearranged The Facts?

Again, ShuffleBuffer's the culprit. You want to move paragraph #1 down where #3 is? Want to add a chart or picture? No problem. No mystery, either. Any buffer can give you FIFO, basic first-in, first-out printing. And some buffers offer By-Pass; the ability to interrupt long jobs for short ones. But only ShuffleBuffer has what we call Random Access Printing — the brains to move stored information around on its way to the printer. Something only a computer could do before. Comes in especially handy if you do lots of printing. Or lengthy manuscripts. Or voluminous green and white spread sheets. And by the way, ShuffleBuffer does store up to 128K of information and gives you a By-Pass mode, too.

And Who Spilled The Beans 239 Times?

Most buffers can't tell the printer to duplicate. If they can, they only offer a start/stop switch, which means you're the one who has to count to 239. Turn your back on your buffer, and your printer might shoot out a room full of copies. ShuffleBuffer, however, *does* control quantity. Tell it the amount, and it counts the copies. By itself.

So, What's The Catch?

There isn't any. Sleuth around. You won't find another buffer that's as slick a character as this one. You also won't find one that's friendly with any parallel or serial computer/printer combination. This is the world's only universal buffer.

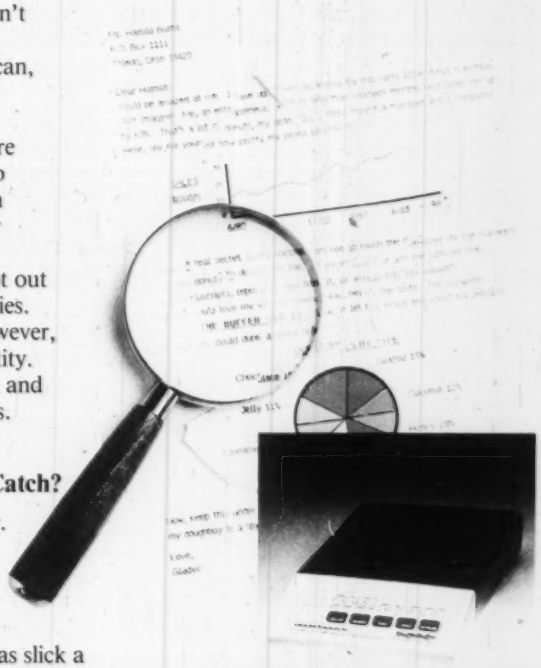
With a brain.

CIRCLE 202 ON READER SERVICE CARD

Who Wants You To Catch A ShuffleBuffer In Action?

You guessed it. We do. Just go to your local computer dealer and ask him to show you a ShuffleBuffer at work. Or, you can call us at (215) 667-1713, and we'll clue you in on all the facts directly.

* Based on an average 4000 character letter & 128K buffer.



ShuffleBuffer

The Buffer with a Brain

Interactive Structures Inc.
146 Montgomery Avenue
Bala Cynwyd, PA 19004

```
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
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=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
```

Oki Microline 92 at 160 cps.

My only nit to pick: I had a little trouble with the ribbon on the 7020, which differs from the 7030 ribbon just slightly. It has a clear plastic sheath over the ribbon just in front of where the printhead resides. My theory is that its purpose is to keep the ribbon from staining the paper when the printer is not in use. I discovered, however, that the plastic interfered with the ribbon during operation, so I pulled it off the front of the cartridge. From there on, everything looked perfect.

You may be getting the feeling by now that I remain extremely impressed by the Qantex printer, and you are right. I really like the idea that top-notch printers can be manufactured in the good old USA—to a caliber that imports cannot come close to matching.

For more information, contact North Atlantic Qantex, 60 Plant Ave., Hauppauge, NY 11788. (516) 582-6060.

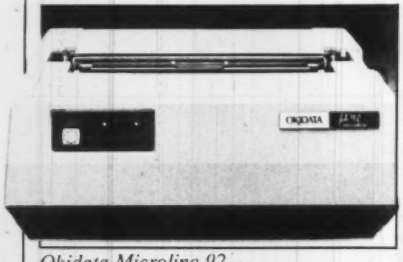
CIRCLE 351 ON READER SERVICE CARD

Oki With Me

Fine, dandy, terrific. I can get a great printer if I want to spend well over $1000 for it. What am I, made of money? How close can I get to the speed, quality, and durability of a Qantex printer, for under, say, $500?

Easy. Buy an Okidata Microline 92. For the money, it is just about the best quality printer around. I also reviewed the Microline 92 back in March 1983, calling it "a winner" and giving it a rating of four stars.

I was so impressed with the 92 that I convinced Dave we should buy it. It has functioned under heavy use for over a year without a hitch. What better recommendation could I make for a low-cost printer?

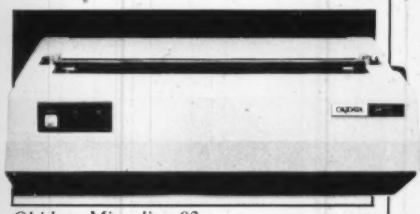


Okidata Microline 92.

The Microline 92 functions at 160 cps, in a very readable font. You won't find a faster printer for the money. At 40 cps, it provides serviceable correspondence quality. It can handle graphics, has friction and pinfeed standard, and six different pitches. It sports a form length selector on the front panel, and is much easier to paper load than many other machines. It handles paper up to 9.5".

My picky complaints about the Microline 92? Well getting at the DIP switches requires removing the top of the case, and that is a pain. I lost the screws that hold the top case on long ago, because I need to get at the DIP switches fairly often. I realize this is not the case for many folks, but the DIPs should still be easier to get at.

Then there is the fact that the Oki's use spool ribbons as opposed to cartridges. This means you will probably stain your fingers during a ribbon change. The threading path is not particularly elegant, and the potential is there for creating calamitous configurations. I once had to take a screwdriver to the lefthand ribbon guide because it was out of alignment. The ribbon kept catching underneath it and horribly binding the entire mechanism. My fingers were black for days after that one.



Okidata Microline 93.

On the flip side of the ribbon argument, cartridge ribbons can cost more than twice as much as a spool ribbon. They sure are convenient, though.

Since our last report, Oki has released the Microline 93, which is the 16" version of the 92. Both printers come about as highly recommended as you are likely to see from this source. Last time I looked, I saw a mail order price of $455 for the Microline 92. That is fantastic, for a printer of such caliber. And it can be configured in serial or parallel with just about any micro. So don't say I didn't let you know about it.

Until next time, keep your platens clean, and don't try to back up on address labels. Catch you again.

Okidata Corporation, 111 Gaither Dr., Mount Laurel, NJ 08054. (609) 235-2600.

CIRCLE 352 ON READER SERVICE CARD

"...Remember Logan. ...You're just a peripheral..."

THE PERSONAL PRINTER BUILT LIKE A SHERMAN TANK PERFORMS LIKE A CONCERT GRAND.

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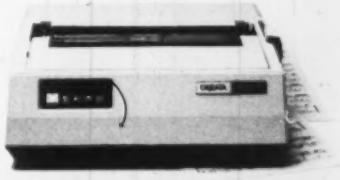
We Play On and On. Our virtuosos feature rugged steel frames, laser-welded parts, and our long-life, non-ballistic print head warranted for up to one full year. With this tank-toughness you'd expect Okidata to have the lowest warranty claim rate in the industry. And we do: less than ½%.

In Tune with All Major Computers. We've designed each of these finely tuned instruments to be harmonious with all the major names in personal computers. And to give you more than you'd get from the major computer name printers. After all, we specialize in printers. The computer folks specialize in computers. (That's why MOST buy their printers from somebody else).

Larger Selection. Smaller Prices. Because we make more printers than anybody else, we can give you just the right one to fit your specific needs. Not to mention your budget. Suggested retail prices range from $299 to $2995. Call 1-800-OKIDATA (in NJ, 609-235-2600) for the dealer nearest you. Both you and your computer will enjoy the performance.



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CIRCLE 180 ON READER SERVICE CARD

Telecommunications Talk

Brian J. Murphy

Welcome to the fourth installment of Telecommunications Talk. Looking forward to future columns, I am especially interested in collecting your tips and suggestions for better telecommunication to share with other readers in these pages.

You may have suggestions on how to improve the performance of equipment or software, program listings of use in telecommunications, BBS software, you name it! I am not offering much more than glory, but if you have something worthwhile to offer, send it in to me c/o Creative Computing, 39 East Hanover Ave., Morris Plains, NJ 07950, and you may see your name and your ideas in print.

CompuServe Profile

We continue our profiles of information utilities this month (and perhaps every month, considering the number of new utilities entering the market) with a profile of CompuServe.

In the field of information utilities there are really only two big contenders, The Source from Readers' Digest and CompuServe from H & R Block. Of the two, CompuServe is the more exciting. We are going to look only at parts of CompuServe, rather than at the entire system. CompuServe covers a lot of territory—hundreds of "pages" of information. To profile all of it thoroughly would require several columns. What we offer here is an overview.

CompuServe is first and foremost an information utility. The majority of its services involve the provision of data to the user. A few of these services are interactive on a user/system or user/user basis. We'll explore these aspects in a moment, but first let's look at the basics of signing up.

CompuServe memberships are available from dealers such as computer shops or supply houses for between $19.95 and $39.95 depending on the kind of deal you strike and how much "free" connect time (one to five hours) you want. This is a one-time fee. There are no annual membership dues.

A short time after you order, a box containing the CompuServe Information Service (CIS) Starter Kit will arrive. In the kit you'll find a loose-leaf binder with a very elementary users' handbook, a list of phone numbers you can call to connect, and an envelope containing your user ID number and system password.

The CompuServe Network Service is the least expensive way to connect to the system.

Logging On

The CompuServe Network Service is the least expensive way to connect to the system. There are about 160 numbers covering most of the contiguous 48 states and parts of Canada, and the connect time price is very right—free! You receive a list of these numbers with your kit, but it may not be complete. If your locality isn't serviced by a number, you can refer to the Network Access Telephone Numbers feature of CompuServe's User Information system or you can call CompuServe's customer service voice phone.

You can also log onto CompuServe via Tymnet, Telenet, and Datapac. This capability increases the available access numbers dramatically. With these four networks, CompuServe is available to users in all fifty states. The large number of numbers also means that a great proportion of CompuServe users do not have to pay telephone company long distance charges for the use of the line (on top of the data network and CompuServe connect time charges).

On your first log-on you will discover that parts of the CompuServe system (most notably the shopping services—a feature shared by The Source) are still closed to you. These are services open only to permanent members, who must complete and return a form enclosed with the starter kit and also "sign-up" on the system itself. Once you have done that and received your permanent password, the restricted areas will be opened to you.

First, let's examine how CompuServe is structured. Like all the other information utilities, its various features are accessed by menu selection. The main menu, which comes up automatically when you log on, offers six choices, Home Services, Business and Financial, Personal Computing, Services for Professionals, User Information, and Index. Each of these main choices leads to several branch menus. Let's explore one to see where it leads us.

"There's No Time Wiser Than After Dark."

When you're looking for solid, up-to-the-minute information, the best place to search is BRS/AFTER DARK. The one system designed for serious searchers, AFTER DARK offers you more databases citing more authorities on more subjects than any other popular online information service—at the lowest cost.

For only $6 to $20 per connect hour, including telecommunications charges, you can personally access the same online files used by major reference libraries and corporations worldwide. These files contain the latest information on subjects ranging from business management, mathematics and education to health, psychology, chemistry, family planning, and just about everything in between.

The range of databases available keeps expanding all the time. AFTER DARK now brings you the full text of the **Academic American Encyclopedia**, as well as the **Harvard Business Review.**

And for microcomputer buffs, there's a new online Software Directory listing major software packages.

AFTER DARK's simple, interactive language and straightforward logic take only minutes to master. The system is outstandingly comprehensive, remarkably fast, and above all, fun to use. All you need is your classified BRS password and any dial-up system. Then, every weekday from six in the evening until the early morning hours—round the clock on weekends and holidays—you can summon up a wealth of valuable information.

Use the coupon to sign up for BRS/AFTER DARK before another evening goes by. Seriously, it's like having your own university library online at home.

BRS COLLEAGUE

AFTER DARK

CIRCLE 111 ON READER SERVICE CARD

CC 4/84

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Home Services

Selecting Item 1—Home Services—from the main menu sends you to a branch menu from which you can choose:

- Reference Library, which contains a Grolier electronic encyclopedia; an information on demand utility; and articles on sports, hobbies, family matters, sex, and fashion.
- Communications, which includes the "CB" conferencing system, CompuServe's E-Mail system, a national bulletin board, the "Ask Aunt Nettie" advice column, and the CB simulation Sig.
- Home Shopping, a fascinating service on which we shall enlarge on shortly.
- Groups and Clubs, the access point for all the non-computer Sigs including CB, literature, issues, education, sports, golf, space, arcade gaming, and more.
- Games, including adventures, sports games, science fiction, and warfare simulations and more—but virtually all text only.
- Home Management, which includes home finance management programs such as loan amortization and checkbook balancing.
- Travel, which includes a travellers' Sig, reports on flight availability and fares prepared by the prestigious Official Airline Guide (OAG), where to stay and where to dine on vacation.
- Entertainment, including the Hollywood Hotline and information on movies and video.

On the day I tried the system out for this article, I selected Item 1, News/Sports/Weather. This selection led to another multitude of choices in yet another menu—using CompuServe is like inspecting boxes within boxes within boxes—called News Services. The choice titles, which are organized by category and seem fairly self-explanatory, are The Washington Post, St. Louis Post Dispatch, AP Viewdata Wire, NOAA Weather Wire, Official PGA Tour Guide, and Hollywood Hotline.

When I was testing this, it was the day the U.S. Marines and Rangers invaded Grenada, so I selected the AP Viewdata Wire option.

I got another menu, but this time it was a selection of the type of news I could read: latest news—update hourly, weather, national, Washington, world, political, entertainment, business, Wall Street, Dow Jones averages, features, history, and sports. I selected world to see how the struggle for Grenada was coming along.

It was exciting to read news in advance of seeing it in the afternoon papers.

I got another menu, but this time it was a short listing of the stories currently on line. Three of the seven stories dealt with the fighting on Grenada and the rest with other world events. The story I wound up reading was the latest AP update on the combat in Grenada, leading with the seizure of 600 Cubans by U.S. forces (a story which later proved to be erroneous, by the way, but that was not CompuServe's fault).

It was exciting to read news in advance of seeing it in the afternoon papers. The news service, because it is so prompt, gives you a feeling of participation in the events of the day. I was also impressed to see that the update was filed less than an hour prior to my calling it up from CompuServe. Incidentally, I found out that the stories are not kept on line forever. About seven hours later, when I logged onto the news service again, all the stories that had been available that afternoon had disappeared, replaced by a single Grenada story wrapping up events for the past several days.

That is the story of a typical CompuServe access, traveling the menu route. The system is designed to zero in on your interests and needs as precisely as possible, reducing the amount of unwanted information through which you must sift or read before you get to the data you are interested in. Once you are familiar with the system, however, there is a more direct way to get where you want to go right from the main menu prompt.

The shortcut is frequently the GO command. This command, followed by an alphanumeric code, takes you directly to the "page" on which you want to be. For example, suppose that I wanted to use a GO command to the Associated Press access page. I would type at the first prompt GO APU-52, and it would take me right to the start of the Associated Press news service option, three menus away from the main menu.

Similarly, if I want to investigate the Comp-U-Store service, all I have to type is "GO CUS" and I am there. In fact, while we're here, let's look around for a minute or two and examine some of its features.

Comp-U-Store

The Comp-U-Store itself is one of several shopping options, and is by far the most interesting. It is a part of CompuServe and The Source and embellishes both substantially.

One of Comp-U-Store's more exciting features is the weekly auction. In it, shoppers have the opportunity to bid for first-quality products at ridiculously low prices. On one week's lineup was a new Sony Walkman model WM10, a barbell set, and a stereo cassette tape deck with all the extras. The Walkman, which lists for $99 was getting bids in the $25-$35 range. What a deal for the bidder who wins! (I bid $28 but lost).

Elsewhere may lurk some rather offbeat bargains—anything from cases of light bulbs, several gross of pens, or almost any other type of dry goods available for purchase in quantity. If the

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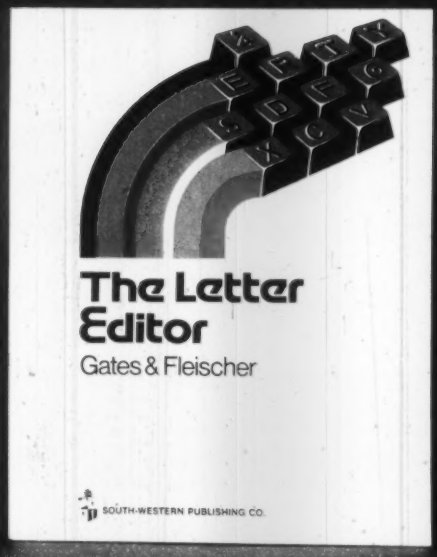
CIRCLE 193 ON READER SERVICE CARD

After Pac Man... What?

Pac Man, Super Pac Man, Donkey Kong, Asteroids ... you've got them all, right? Well here are two new software packages you probably don't have but should add to your collection.



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CIRCLE 213 ON READER SERVICE CARD

selection seems a little off the wall, remember that from time to time you might just run across something you can use. It is a good idea to check out the super values every so often, just to be sure.

Great buys also abound in the Databasement, where you can find all kinds of electronic equipment, computers, stereo, televisions, cameras, china, silverware, and other odds and ends at up to 50 percent off. The products are recognizable name brands, and the discounts are cut very, very deeply.

In the regular Comp-U-Store selection, the bargains are almost as outstanding. A glance at the listings of 19" color televisions, for example, revealed several outstanding buys, including a Sharp model listing at $379.95 for $296.80, a Sylvania listing at $519.95 for $331.32, and a Toshiba retailing for $449.95 for $315.35. I checked out speakers and found similarly great buys. It was only by reminding me that my baby would starve if I started investing in hi-fi equipment again that my long-suffering wife was able to dissuade me from equipping every room in the house with woofers and tweeters.

One of the nicest things about the Comp-U-Store itself is the way it homes in on exactly what you want, winnowing the selection to just those items and models you really want. For example, if you were to go looking for a television set, you would be asked if you wanted color or black and white, screen size (about a dozen different categories), remote control or not, the maximum amount you are willing to pay, and what state and zip the item would be shipped to.

Using all this data, the system assembles a selection of all the models which meet your requirements of price, performance, and size with price quotes. As it turned out, when I called up a list of 19" color television sets, without remote control, costing $500 or less, I got seven pages listing more than sixty different choices—all name brands and all excellent buys.

Similarly, when I checked out watches, I was asked if I wanted Quartz or mechanical movement, electric or spring wound, bracelet or leather strap, gold or stainless steel finish, dial or digital display, day and date display added or just current time, and my price range.

Special Interest Groups

Looking at the other highlights of CompuServe, I have to stop for a moment at the very human heart of the system, the Sigs. As I outlined earlier, there is a wide range of interests covered in this feature. You can join sysop Captain Wookie of the Travel Sig if you like and read listings of great hotels and restaurants around the world compiled by Sig members, or you can join in their on-line conferences (these get-togethers are called COs by experienced participants). In a CO, participants are on-line together to discuss a set topic or just to exchange views on their favorite topic.

One of the most exciting COs in recent memory was the meeting of the Apple Sig in October at which Apple founder Steve Wozniak came on line to exchange views with prominent Apple users and computer journalists. The following week I witnessed an Apple conference with a similar distinguished cast of characters—sans "The Woz"—at which a lively exchange of ideas on how Apple can improve its product took place. It was the sort of meeting at which anyone who owns an Apple or who is interested in personal computing would have loved to participate.

The important thing to remember is that this is the sort of exciting activity that goes on every week—not just in the Apple Sig but in the education, issues, space, Atari, and sports Sigs as well. The Sigs offer lively talk and stimulating ideas. They also offer opportunities to exchange E-Mail between users with the same interests and to read up-to-date news on Sig activities. If you join CompuServe, plan to join a Sig. In fact, knowing what I do now, I would consider joining CompuServe just to be in the Apple Sig. You may well feel the same way about the Sig that caters to your special interest area too.

I have grown to love electronic encyclopedias.

The Sigs and the computer shopping services are an important part of CompuServe's allure, but they are not the only interesting things going on in the system. Here is a selection of some of the other highlights.

System Highlights

• The Grolier Academic American Encyclopedia: I have grown to love electronic encyclopedias. Even though there is a surcharge of $5 an hour, it is a treat to have the information you need, however infrequently, without having a set of books gathering dust and filling valuable bookshelf space.

To find the article you need, just type in the name of the subject in which you are interested. I chose Grenada for the purposes of this article and I was soon given the choice of the texts of the three articles on the island or a "fact box." The fact box turned out to be an abstract of everything you ever wanted to know about the island, such as its population, products, economy, government, topography—even its divorce rate. In the text section, three articles covering all aspects of Grenada past and present were available.

This is the kind of service which can make CompuServe especially valuable to families with children. There is no denying that Grolier is an old and respected name in reference works. Having virtually an entire encyclopedia at your fingertips (and not having to pay for it except when you actually need it) is a real asset.

• Business and Financial Services: This section of CompuServe includes such options as News and Financial analysis (includes five different reports), a service offering investment information (including Standard & Poor's ratings of about 80 different corporations and commodities reports), a communications option and E-Mail that amounts to a buinessman's Sig, a reference library, discussion forums, travel services (largely duplicating the travel services found elsewhere in the system), and programs to assist with personal financial planning.

• Personal Computer Services: This is an obligatory stop for anyone interested in personal computers, if only to sign up for the system-specific Sig of your choice. There are also product reviews and shopping to scan. It is worth noting that the programmer's section offers a big selection of languages and ample storage space for the use of software authors.

• Services for Professionals: This is just what the name implies. For some of the areas, such as Aviation, the selection is lavish: computer mapping, flight planning, weather reports, etc. and for others, such as Legal, there are just two services listed. The most interesting: the jeweller's service, including diamond wholesale quotes.

• User Information: Nothing exciting here, but you will find assistance with your bill, ways to change your password, phone numbers you can use to log onto the source, manuals you can order, and miscellaneous information for computerists.

• The Index: This is the most useful of the system utilities. This contains the GO code for every menu in the system. You can go right to your Sig, your favorite news or financial report, to the game section or anywhere else in CompuServe without having to page through the intermediate menus.

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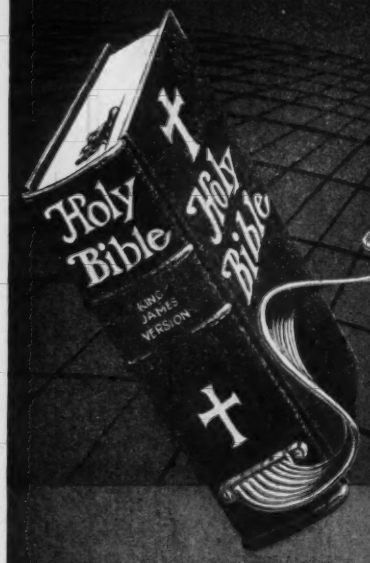

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Telecommunications, continued...

CompuServe In Summary

CompuServe is the most interesting and user-friendly of the three info utilities I have examined. CompuServe isn't just a good introduction to information utilities; it is the best possible introduction. Judged as a whole, it may well represent the state of the art in its field. What do I like best about the system?

First, it offers help options (which let you step out of the program whenever you wish to review commands and protocols) every step of the way. The system is so user-friendly that it is really quite hard to get "lost."

Second, the selection of news and business information is not as extensive as that found in The Source, but it is more diverse, with the St. Louis Post-Dispatch and the Washington Post lines as options in addition to AP. For the casual consumer or investor who just wants to keep up with current events, the news service is more than adequate. Again, kudos for the timely updates and for not letting stories sit around on the wire forever. Also kudos for including the Comp-U-Store among the extensive and helpful catalog of home service options.

CompuServe is the most interesting and user-friendly of the three info utilities I have examined.

Finally, there are the Sigs. What they have to offer depends largely on what you make of them. The Apple Sig is a demonstration of just how great they can be when people put their enthusiasm and interest into the group. If you subscribe, join a Sig and participate!

Prices

No discussion of CompuServe would be complete without a discussion of the connect time charges, which happen to be very competitive. There has been a big rollback in prime access time charges (for 300 baud service, 5:00 a.m. to 6:00 p.m.) from $22.50 an hour all the way down to $12.50 an hour. This might cause some of the strictly "after dinner" users to consider becoming lunch hour participants as well. Connect time at all other times including weekends is $6.00 an hour.

Extra charges are levied for such services as the encyclopedia and some of the news and business information services.

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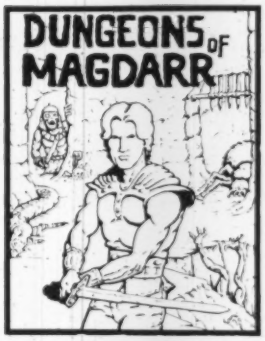

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CIRCLE 101 ON READER SERVICE CARD

Notebook/Portable Computing

David H. Ahl

If you caught the news flash in our column last month, you know that the restrictions that airlines had, and have, against using notebook computers are being reversed. United, the largest U.S. carrier, decided that notebook computers are okay, and we hope that the others will soon fall into line. We haven't had any problems lately, but we still get letters from readers who have. We hope that by the time you read this, it will be a non-issue.

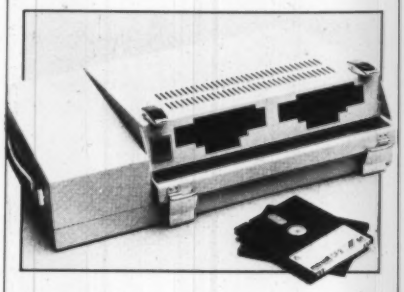
Checking out the booths at several recent trade shows and looking over the monthly stack of press releases, it is apparent that the level of activity among manufacturers and would-be manufacturers of notebook computers is frantic. Without a doubt it is one of the hottest areas of the computer market—and with good reason. So this month, we are going to take a look at some of the newly announced computers, peripherals, and software.

Peripherals And Software For NEC 8201

In addition to the PC-8800 computer family (*Creative Computing*, Nov. '83) and NEC Trek (PC-6000 series) at CES, NEC was showing several peripherals for their 8201 notebook portable. Currently available peripherals include a 32K external RAM cartridge ($395), portable thermal printer ($170), cassette data recorder ($115), and several cables. The printer uses thermal paper just under 4" wide and has an eight-wire printhead that can produce both text and graphics. It uses four AA batteries or AC adapter.

The niftiest peripheral was a portable floppy disk drive. It has single or dual drives, each capable of storing 160K on a 3" floppy disk. In addition, the drive has 64K of RAM to extend the memory of the 8201. The drive is compact, but weighs a hefty eight pounds. No word on projected price or availability date.

NEC also announced ten new software packages for the 8201. Three are expected to be available almost immediately; they include packages for business graphics, statistics, and personal tax



planning. Later releases include packages for financial analysis, time-accounting, tax preparation, real estate analysis, database management, and spreadsheet calculations. No prices were announced.

NEC Home Electronics, Personal Computer Div., 1401 Estes Ave., Elk Grove Village, IL 60007. (312) 228-5900.

CIRCLE 499 ON READER SERVICE CARD

Add-on Memory For Model 100 And NEC 8201

Several vendors have announced 8K RAM memory modules for the Model 100 and NEC 8201. These are functionally identical to the $120 chips from Tandy and NEC but generally are priced under $70.

We talked to Larry Berg, president of Purple Computing, who told us that they use a single Hitachi or Toshiba 8K chip instead of using four 2K chips as Tandy and NEC do. Thus, the finished module can be produced at much lower cost than the Tandy or NEC ones. We tried their modules in both computers, and they work well. Purple also has Centronics/Model 100 printer cables at the bargain price of $11.95 (with the purchase of a memory module).

PG Design, like Purple, uses an 8K chip, but, according to their president, Peter VanHeusden, it is a low-power unit which draws less than one half of the standby current drawn by the comparable Tandy or NEC chip. Thus, the battery life should be considerably extended.

PG Design is also coming out with a 32K module for the Model 100 that plugs into the expansion bus. It comes with a short program to select it as the second memory bank. It will have its own directory, much like the NEC 8201 plug-in module. Price is projected to be $325.

BT and Holmes, on the other hand, use four 2K chips in their 8K memory modules, but apparently are willing to live with lower profit margins than Tandy or NEC.

The vendors of 8K memory modules are:

- Purple Computing, 4807 Calle Alto, Camarillo, CA 93010. (805) 987-4788.
- PG Design Electronics, 66040 Gratiot, Richmond, MI 48062. (313) 727-2744.
- BT Enterprises, 10B Carlough Rd., Bohemia, NY 11716. (516) 567-8155.

• Holmes Engineering, Inc., 5175 Green Pine Dr., Salt Lake City, UT 84123. (801) 261-5652.

Notebook Computer From Visual Computer

Visual Computer Inc. has released a high-end notebook computer. At 15" x 18" x 3" and 16 pounds, it is one of the larger units. However, it boasts IBM compatibility with a 16-bit mpu, 128K (expandable to 512K), one or two 5¼" floppy disk drives, and serial and parallel ports. Base price is $1995 not including a monitor or display.

There are two display options. The standard configuration comes with an RF modulator for use with a monochrome or color TV set, or RGB monitor. Visual Computer also offers an

80-character by 16-line LCD display for $495.

Included in the price is MS-DOS, but no bundled software; the company claims that the machine has "true IBM PC compatibility." In addition, Visual offers "an optional RS-232 port providing async, bi-sync, SDLC, and HDLC communications support capability."

Visual Computer Inc., 135 Maple St., Marlboro, MA 01752. (617) 480-0000.

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Canon Typestar 5 Personal Typewriter

The Canon Typestar 5 is a cross between a notebook computer and a typewriter both in capability and price. Costing just $249, the Typestar 5 is one of the first battery powered electronic typewriters.

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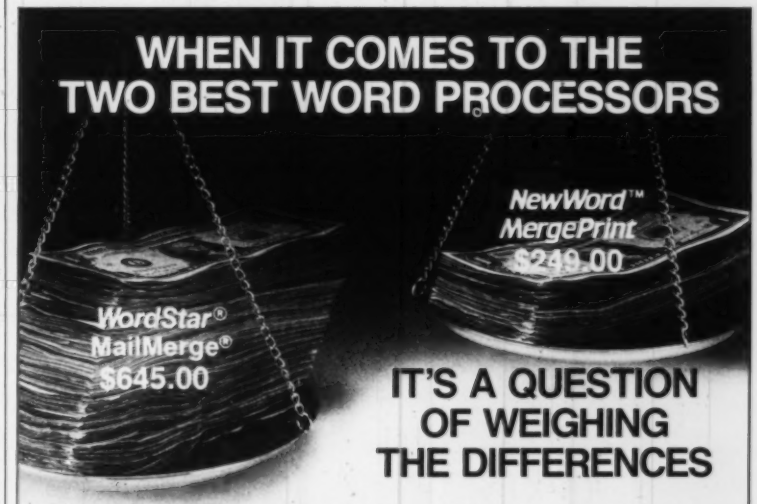

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tended widths. Canon claims the print is "letter quality," but, since it uses a thermal transfer process, the paper must have a smooth finish.

The Canon Typestar 5 is a cross between a notebook computer and a typewriter both in capability and price.

The Typestar 5 has a 30-character buffer, the last 15 characters of which are shown in a one-line LCD display. Features include automatic carriage return, underlining, and centering. Print speed is 18 characters per second.

For power, the unit can use four D cells, NiCad battery pack, or AC adapter. It measures a compact 12.3″ x 10.5″ x 2.1″ and weighs 6 pounds with batteries.

Canon Inc., One Canon Plaza, Lake Success, NY 11042. (516) 488-6700.

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Epson Newsletter

For Epson HX-20 owners wondering if the whole world has forgotten them, we have some good news. The Epson Connection is an excellent newsletter published by the Epson Users Group for HX-20, QX-10, and even Epson printer owners. The Nov/Dec '83 issue had several excellent articles on QX-HX interfacing, software for the HX-20, database management, and much more.

Membership fee is $15 per year ($18 Canada, $25 elsewhere). Write The Epson Connection, P.O. Box 14027, Detroit, MI 48214.

Forth For The HX-20 And Model 100

Almost simultaneously, two software companies have announced availability of the Forth language for the Epson HX-20 and the Model 100.

Stable Technologies offers Forth on two 8K PROMs which plug into the HX-20. HX-Forth is said to be ideal for real-time applications and has several enhancements over standard fig-Forth, including array and record structured variables, 20-digit integer arithmetic, floating point arithmetic, microcassette control, trace/debug mode, and a built-in assembler for linking machine language programs to high-level code. Price is $195 from G.W. Smith Associates, 62 N. Chapel St., Newark, DE 19711. (302) 738-7308.

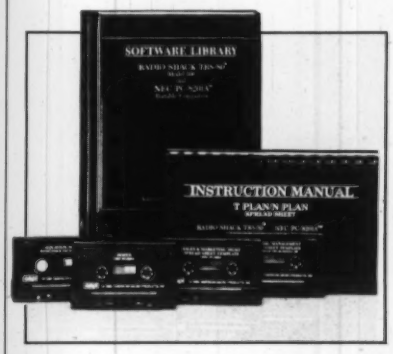
Also for the HX-20, Forth from Interface Solutions is furnished on microcassette and makes full use of the microcassette, microprinter, and RS-232 port. Program development may be done on the HX-20, an external system, or a combination. Disk operations are simulated in the RAM of the HX-20, and the system is fully compatible with fig-Forth. Price is $95 from Interface Solutions, Inc., 1710 Shelby Oaks Dr. North, Suite 21, Memphis, TN 38134. (901) 372-3764.

A Forth package for the Model 100, conforming to the Forth-79 standard was announced by AMI. It comes with a screen editor and 200-page manual, but we have no more information than that. American Micro Products, 705 N. Bowser, Richardson, TX 75081. (214) 238-1815.

Spreadsheet Software For Model 100/NEC 8201

Several announcements of spreadsheet packages have arrived in recent weeks. We plan to get a copy of each package and do a definitive analysis, but in case you can't wait, here is some early information.

T Plan/N Plan for the Model 100 and NEC 8201 handles a spreadsheet with up to 96 rows and 26 columns. It has the four arithmetic operations and can insert or delete columns or rows, replicate numbers or formulae, go to any cell,



copy, save, load, and print reports or formulae. American Micro Products (see address above).

PortaCalc is a spreadsheet with 14-column by 26-row workspace. It has all arithmetic operators including exponentiation, absolute value, integer, summation, and averaging. Calculations are done to 14 digits of accuracy and displayed in fields of up to nine digits with decimal places user-selectable (up to seven). Features include formula replication, saving, loading, screen print, report print, and formula lookup. Included with *PortaCalc* are two utility programs, PortaDex, a data exchange program that

reformats *PortaCalc* data into the *VisiCalc* DIF format, and PortaPrint, an enhanced print formatting program. Price is $69.95 from Skyline, 4510 W. Irving Park Rd., Chicago, IL 60641. (312) 286-0762.

Personal Plan is a spreadsheet from NEC about which they released decidedly few details. It is said to be "much larger than the screen, and be able to accept labels, numbers, and formulae." It will also have a Help function. NEC Home Electronics (see address above).

ESS 2.2 comes in two versions, 2K and 8K, and is said to "do almost anything you desire in the way of forecasting and planning calculations." It saves data and formula files and prints results. Just $29.95 from Datamasters, P.O. Box 3560, San Luis Obispo, CA 93403.

Stringy Floppy = Wafer Tape = Micro Drive

Remember the stringy floppy drives that Exatron was making several years ago, mainly for TRS-80 and Pet computers? They had a loyal following, and Exatron seem poised to make the big time. But then floppy disk prices came down. Way down. And nobody wanted a stringy floppy anymore.

Loathe to see a good thing die, Exatron was reincarnated as Entrepo and worked out several OEM contracts to supply stringy floppy, now renamed wafer tape, drives to Coleco (for the Adam), TI (for the CC-40), and SpectraVideo (for their as yet unannounced notebook computer).

Well, the Coleco contract fell through when engineering problems could not be solved in time for the introduction of the Adam. Now, TI has dropped the device because of continuing problems with reliability. A TI spokesman said, "Wafer tape is not the way to go. We're looking at alternatives." Problems reported with the Entrepo drive include tape alignment and stretching. The unit is said to be particularly vulnerable if it is tilted, even slightly, during operation. That problem, of course, must be solved before the drives can be used in the new SpectraVideo notebook computer.

However, if you would like a standalone drive for your Model 100, Holmes Engineering incorporates it into their PMD-100 portable micro drive. The PMD-100 is a high-speed wafer tape drive with storage of up to 70K per wafer, ROM-based operating system, menu-driven software, rechargeable battery (with charger), and cable (to RS-232 port) all in a nice, compact package. Keep it level, and it should work just fine. Price is $349.95 from Holmes Engineering (address in 8K memory section). EOS

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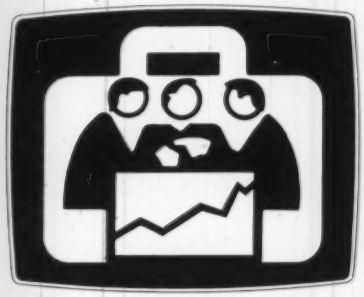

Let's Talk Business

Dale Blanchard

Long-time readers of this magazine have no doubt already noticed that this is a new column. Was it simply chance that directed the editors to add a business column to an already-thick magazine? Certainly not; a business column fits neatly into the overall fabric of what is going on with computers. Specifically, people are finding it hard to come up with intelligent uses for their home computers beyond games and simple bookkeeping and mailing list applications. Computers are mind tools, and the home is not traditionally a place of heavy thought. In fact, most of us who work use our homes as a place to escape from the pressures of the business.

I will elaborate on those ideas later, but first, since I will be doing this column every month, perhaps I should introduce myself. As you probably gathered from the name at the top of the column, my name is Dale Blanchard. I run a small business in Fremont, CA which is currently involved in two primary activities: computer consulting and producing computer software.

Roughly nine years ago I got involved with computers because I am a lousy typist. My partner, my wife, and I started a small business providing vocational counseling and consulting. My partner was a certified counselor, I had the business expertise and marketing contacts, and my wife was too smart to get sucked into being our secretary. "You've got to be kidding!" she said. "Once a secretary, always a secretary." She went on to become a psychotherapist and I ended up doing the typing. With luck I can type a short paragraph without any errors, which is not good enough to impress new customers. That led to a word processing system.

Later, more computers and programs were added, and I eventually had made enough mistakes that people began to think of me as an expert. I'm not, really. True, for most of you I am from out of town, but I don't have any slides to show. In spite of that I am writing a monthly column which has the goal of helping you through the perils of an increasingly confusing computer jungle.

Of course, that casts me in the role of your consultant. Since I believe that one of the first steps in choosing a consultant should be to find out about the consultant's beliefs and prejudices, let me tell you a few of mine:

About Consultants

Most really aren't; most are salesmen in one disguise or another. That puts *you* in a very vulnerable position. Does it make sense to walk into a barber shop for an opinion as to whether you need a haircut? Does it make any more sense to ask a computer salesman if you need a computer?

About Computers

I think most businesses try to get them to do too much, too soon. Too many people view them as solutions instead of tools to help arrive at solutions. From a sociological point of view, computers scare me—a lot.

About Computer Hardware

There is some truly magic stuff out there, some of it tremendously valuable to businesses, some of it little more than expensive novelties. Hard disks have tremendous potential, but they scare me.

"Why?" a programmer friend asked me.

"Because they are too inconvenient to back up."

"I always back mine up," he answered.

"Yes, but you're a computer professional."

He got an enlightened look on his face and said, "I see what you mean. I know about computers, but those poor folks out there believe they work."

"Exactly," I replied.

About Business Software

Some of it is very good; most of it is too hard to use; and too much of it was written by people who know very little about running a business. For the most part I don't think it is too expensive. Compared to games, it is expensive. Compared to not having it, it is very inexpensive. Some of the best costs very little; some of the worst is very expensive. You don't necessarily get what you pay for.

About Computer Manuals

For the most part they are nearly incomprehensible. Usually, that is because they were written by the wrong people, computer engineers or computer programmers. People who use computers should write manuals. Or maybe they should be written by teachers. They should not be written by engineers. Engineers know too much, and they are interested in the wrong things. Bits and bytes don't matter.

About Jargon

I abhor jargon—bits, bytes, kilobytes, megabytes, baud rates, screen refresh rates—computer literature is full of it.

But we are not alone. I was looking through a copy of my wife's *The American Journal Of Psychiatry* and came across an article with this title: "Complex Partial Status Epilepticus Simulating Psychogenic Unresponsiveness.

My wife said, "That's very precise. In fact, I can't think of a shorter way to say it."

"But what does it mean?" I asked.

She smiled mysteriously and went back to work.

Nine years ago when we were starting our counseling business, several other people were also starting theirs. We used to get together and discuss problems, approaches, and the like. One of the problems we all faced was how to communicate what we were doing to insurance claims people. I held out for the proposition that we had a duty to convey clearly and precisely what we were doing—to translate out activities into language that anyone could understand.

One of my colleagues took the opposite position. "No," he said. "We are not talking about jargon. We are talking about industry-specific language. Those words exist because they precisely and accurately convey the concepts of our profession." He was at least partly correct.

I currently have a friend who thinks it makes no economic sense for the computer profession, or any other profession, to communicate clearly. "The way to make immense amounts of money is to invent a language and then charge exorbitant fees to translate it for people. Look at what lawyers and accountants have done."

I am still against jargon, but I do believe in the concept of industry-specific language. I also believe that if we in business are to survive without paying someone exorbitant fees to translate the language of the computer industry for us, we owe it to ourselves to learn that language. How else will we know when we are being told the truth?

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Those are some of my prejudices. I will probably discover more as we go along, but for now I would like to lay a little more foundation for the direction of this column.

Computerizing Your Business Within The Larger Context

Above, I said that sociologically computers scare me. Let me tell you why. At the end of World War II I was a small child. My parents had a small 40-acre farm in Idaho. Most of our neighbors had similar farms. We all farmed with horses. When it came time to get the hay in, the men of the neighboring farms would form a large work party and move from farm to farm, first mowing the hay, then raking it, then loading it on to wagons and hauling it to the yard and stacking it. I was a little kid and got to ride on the wagons.

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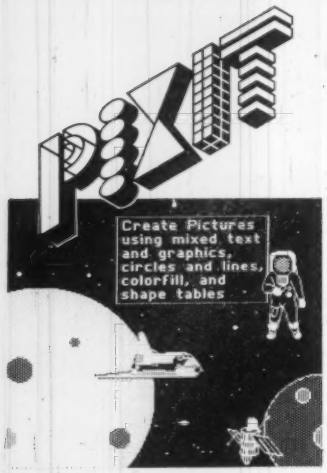

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Business, continued...

By the time I graduated from high school farms were much larger, and I was driving a large self-propelled machine which mowed and raked the hay in one pass. I could handle a hundred acres by myself. That was technology 25 years ago.

In the background of all of this was my uncle. He had suffered brain damage as a child and was somewhat retarded. In the days of labor-intensive farming Uncle Francis could support himself almost as well as the rest of us, but if he were to try it in today's world, he wouldn't make it. That is one of the side-effects of technology.

It is pointless to swim against the tide of history, and computers are the tide of history.

At the time of the Civil War roughly 90% of our population was employed in agriculture, and I suspect we had no surpluses. Today, with the help of technology, less than 10% of our population is employed in agriculture, and we have huge surpluses. What did we do with all those small farmers and their children who were displaced? We absorbed them into the growing industrial society.

But now technology (computers) is beginning to displace many of us. The disabled and the unskilled will be the first to go, but I don't believe for a minute that that is where it will stop. Many of us will be displaced too.

That is terrible, you say. Why don't we stop it all? Why don't we prevent it? Because it is pointless to swim against the tide of history, and computers are the tide of history. What we have to do is to figure out how to get up onto the crest of the wave and ride safely ashore—maybe even have some fun on the way. At all costs, we want to avoid ending up face down in the sand.

That, then, is the context in which I see this column. Many of you are just now beginning to think of computerizing your business. Many of you have already started and are struggling with the details. Still others may have gone beyond computerization and into a new business, the business of computers themselves. We all have something to offer each other.

What I hope is that you will write and let me know what you are thinking and wondering. I love what appear on the surface to be naive questions, because almost always they turn out not to be naive at all, but rather, a legitimate questioning of some fundamental, taken-for-granted concept. I also want to hear from those of you who have found solutions.

There is one minor problem with that. Writing a column for a magazine is somewhat like trying to communicate from outer space. What I write today, you will not see for three months. Don't let that stop you. Pretend you have slipped into a time warp or something.

That is enough for this month. Next month I intend to start with the question of whether to computerize at all. Then I want to explore the concept of the computer as a tool. After that, if there is space, I hope to be able to look at a couple of word processing programs. ENE

"...this one does number crunching. Right now it's pelletizing accounts receivables."

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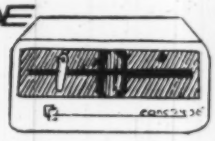

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Logo Type

Donna Bearden

Wouldn't it be nice if Logo had a fill command similar to the one in Pilot? When you place the turtle inside a shape and give the commands, the shape fills with color. Delta Drawing, a single keystroke, Logo-like program also has a fill command. Too bad you can't fill in shapes in Logo; you could make all kinds of simple and elaborate designs, starting with checkerboards and quilts (Figure 1).

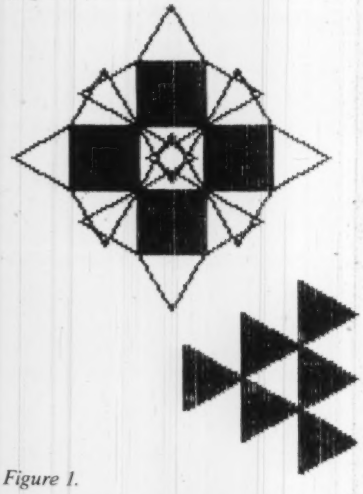

Figure 1.

Hold on! You know you never say can't in Logo. If you can define a problem and use your imagination a little, there is probably a way to solve it.

Coloring a Square

Think about a square. Draw one on a piece of paper and color it in. One natural way to color it in is to go back and forth, moving down the square as you go. How would you tell the turtle to do that?

One way is to repeat the following commands as many times as necessary.

```
FD :D RT 90 FD 1 RT 90
FD :D LT 90 FD 1 LT 90
```

Like most problems in Logo, there is more than one solution. Using recursion and a conditional, we can write a procedure to draw successively smaller squares until the shape is entirely filled in:

```
TO FILL.SQUARE :N
IF :N = 0 [STOP]
REPEAT 4 [FD :N RT 90]
FILL.SQUARE :N - 1
END
```

If we can do it with a square, we can do it with a triangle:

```
TO FILL.TRIANGLE :N
IF :N = 0 [STOP]
REPEAT 3 [FD :N RT 120]
FILL.TRIANGLE :N - 1
END
```

And if we can do it with a triangle, we should be able to do it with a hexagon. We should be able to do it with any regular polygon.

Drawing Polygons

If you have played with polygons and the Rule of 360 or Total Turtle Trip Theorum, you know that the turtle must turn through 360° to draw a polygon and end up facing the same direction as it started. Knowing that, we can write one procedure to draw any regular polygon we want:

```
TO POLY :R :D
REPEAT :R [FD :D RT 360/:R]
END
```

So now we should be able to write a single procedure to fill in any regular polygon.

```
TO FILL.POLY :R :D
IF :D = 0 [STOP]
REPEAT :R [FD: :D RT 360/:R]
FILL.POLY :R :D - 1
END
```

Try it and you will discover that it works pretty well for triangles, squares, pentagons, and hexagons. Once you call for a polygon with more than six sides, you will have gaps in the fill. The more sides for which you ask, the more gaps you will have. If you like seashells, you will like the results (Figure 2).

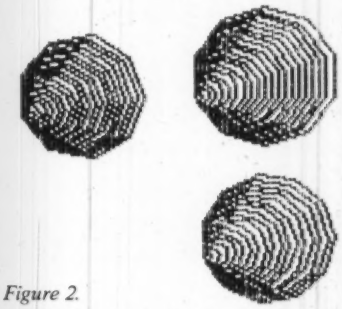

Figure 2.

However, if you are more interested in filling in a solid shape, we must edit the procedure. After much experimentation, we came up with the following. (As we said earlier, however, there is always more than one solution. So you may think of another one.)

```
TO FILL.POLY2 :R :D
IF :D = 0 [STOP]
REPEAT :R [FD :D RT 360/:R]
RT 90 FD 1 LT 90
FILL.POLY2 :R :D - .5
END
```

Drawing Circles

This works for polygons with 7 to 14 sides, and by the time you reach 14 sides, you have the illusion of a circle. A 15-sided polygon begins to have a few holes, so you must edit the procedure again. For now, these are enough to play with.

Sally evolved out of playing with filling shapes (Figure 3). She didn't look

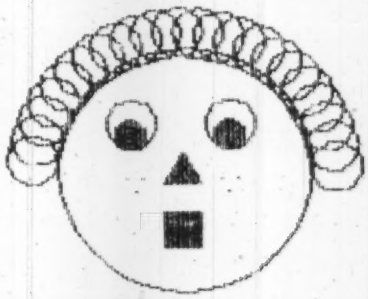

Figure 3.

complete without freckles, so we used the DOT command, which allows you to put a dot anywhere on the screen just by naming the coordinates.

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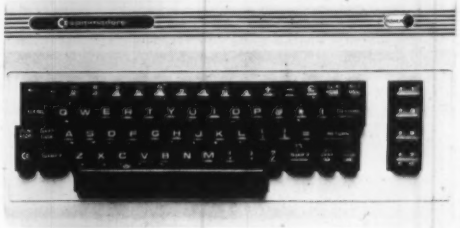


Commodore's Port

John J. Anderson

No need to ponder the question of who had the most impressive microcomputer booth at Winter CES 1984. Far and away, the winner was Commodore. Coleco and Atari were trying and trying hard, but they couldn't catch the leader in consumer micros. "We're Number 1," runs Commodore's latest slogan. And they intend to stay there, too.

The CES Report

The most significant announcement from Commodore at the show was its introduction of the model 264 (for a technical overview of the machine, see the sidebar in the CES coverage earlier on in the magazine). This controversial 64K micro was designed not to supplant the Commodore 64, but to provide a new kind of machine with an emphasis on "productivity" software for the home.

The 264 offers the potential for built-in software and screen windowing capability. It sports a very powerful version of Basic with over 75 commands, and yet 60K of free memory remains for use in Basic programming. There are eight programmable function keys and a HELP key. The cursor movement keys are the best I have ever seen on a low-end micro: they are themselves arrow-shaped and laid out directionally (see photo). No need to shift to obtain any directions of movement.

In addition, the 264 retains compatibility with most Commodore 64 and Vic 20 peripherals. It is capable of producing 16 colors at eight luminances for a total of 128 colors. It can handle high-resolution graphics plotting and split-screen text with hi-res graphics. It has a built-in machine language monitor with 12 commands.

In contrast to the Commodore 64, the 264 cannot produce sprite graphics and has only two-voice sound without sophisticated envelope-shaping. If you are looking for a sound-and-graphics machine, the C-64 is still for you, and Commodore insists it will continue to manufacture and support that machine.

But the thrust for the 264 is "productivity" as opposed to recreation, and that translates into the following specific software directions: household management, word processing, calculation, business accounting, and education. Commodore says it will market high quality software for the 264 in each of these areas. A selection of this software will be available *built-into ROM* inside the 264. By choosing a 264 with a particular software package built-in, you can tailor the computer to meet your needs. Of course, you can use cartridge, tape, and disk-based software as well.

Commodore 264 software will also be made available on cartridge for the C-64.

At CES, Commodore also became the first company to offer fully-integrated software for low-end computers. The package *3-Plus-1* includes a word processor, electronic spreadsheet, file manager, and graphics package.

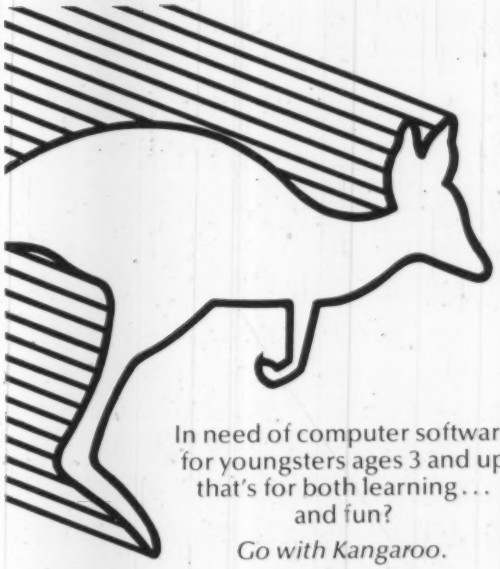
All four programs are integrated in the same software product and work together sharing or swapping information. For example, a financial analysis created on the spreadsheet can be transferred to the word processor and incorporated in a written report.

Commodore *3-Plus-1* will be offered as a ROM cart for the Commodore 64 and built-in or as a cart for the 264. The product also has windowing capabilities which allow the word processor and spreadsheet to be viewed simultaneously.

Other software introduced by Commodore at the show includes the following:

• *Magic Desk II*, a joystick pointer program with integrated text-editor,

Commodore 264.



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Commodore's Port, continued...

spreadsheet, file manager, and calculator, for beginning computer users. Special help screens are built-in, and instead of using keyboard commands, users need only "point" to a picture of the function they want using the joystick.

• *Superscript 264,* a multi-function professional word processor designed for both beginner and expert users. It includes text-editing, numerical calculations, mailing list functions, and a cut-and-paste feature that adds easy on-screen editing capability.

• *EasyCalc 64* and *EasyCalc 264,* fully-featured spreadsheet programs with color selection and graphics. Both will be available on cartridge, providing more workspace in the computer than comparable disk-based spreadsheet programs.

• *Commodore B/Graph,* an easy-to-use business graphics and statistic package for business people and students. *B/Graph* computes and converts financial and statistics results into colorful three-dimensional charts, graphs, pie charts, histograms, and other graphics.

• *Financial Advisor,* a sophisticated financial package which computes loan, mortgage, and investment formulas.

• *Teligraphics,* videotext and graphics software for use with Commodore modems. It allows transmission of pictures, text, and business graphics over the telephone and between computers. *Teligraphics* also allows users to upload and download data via CompuServe and other telecomputing services. Compatible with Canadian Telidon videotext standard.

Commodore announced an improved speech module for the C-64, which plugs directly into the user port of the machine. This leaves the ROM slot open for insertion of "talking" or "nontalking" ROM software.

The Commodore Speech Module contains a built-in vocabulary of 235 words in a pleasant, true-to-life female voice. Speed of articulation can be slow, normal, or fast, and words can be programmed from Basic as well as assembler. The user can program music, graphics, and speech to take place simultaneously. In addition, the Speech Module supports a separate audio output so that speech output can be connected directly to a hi-fi system, television, or sound monitor.

Future educational applications on disk and/or cartridge include the alphabet, counting, spelling, and animals. Higher level applications will include interactive foreign language modules, higher mathematics, and science.

Commodore also announced an agreement with CompuServe to market *Vidtex,* a telecommunications package that allows users to transfer programs from CompuServe's large library to their own systems for immediate use or disk storage. With *Vidtex,* users gain access to services including technical information, free software, an "electronic magazine," and "conversation" with other users.

The *Vidtex* system uses CompuServe's exclusive "B" Protocol, which allows 100% error detection. Other features include the following:

• A 32K RAM buffer which can capture data from a host system for immediate use or for disk storage.

• Printer support—using the RAM buffer, data can be captured at 120 characters per second for printout later on a slower printer.

• Ten programmable function keys which can be loaded with such strings as user ID for the service or any series of commands. By saving macros to disk, sets of function key configurations can be used over and over again.

• Color graphics and cursor positioning.

Third Party Scene

Commodore itself was not the only source of Commodore news at Winter CES. Many third party companies showed new software and new hardware for the Commodore 64. Here is a sampling.

Human Engineered Software (HES)

Human Engineered Software, usually known as HesWare, announced a marketing agreement with Microsoft, through which HES will market Microsoft's *Multiplan* for the C-64.

Multiplan is a second-generation spreadsheet program originally developed for the IBM PC. Microsoft recreated *Multiplan* for the 64, and in doing so, was able to offer Commodore users many of the same capabilities of the original IBM PC version.

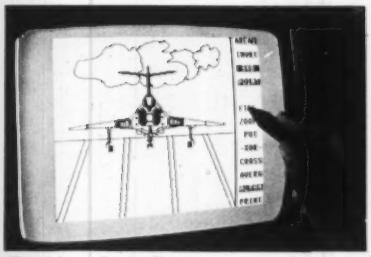
Among the features of C-64 *Multiplan* are automatic math functions, screen windows, variable column-widths, alphabetic and numeric sorting, the ability to link worksheets, and flexible formatting for screen displays and reports.

The package will retail for $99.95.

Inkwell Systems introduced *Flexidraw,* a very impressive graphics software package coupled with a high-performance light pen for the Commodore 64. *Flexidraw* allows C-64 users to perform pencil and paper routines, utilizing the speed and full hi-res graphics capabilities of their machines.

The *Flexidraw* software menu features selections including the following: instant line (point-to-point), rubber band, box, circle, zoom for detailed work, two separate screen display areas, put/get commands for manipulating images on the screen or transferring them between screens, shading and pattern fills.

All graphics generated with *Flexidraw* can be stored on disk for later use or printed as hardcopy. The package can easily be interfaced with Commodore's 1525 printer, the Epson MX-70, Gemini



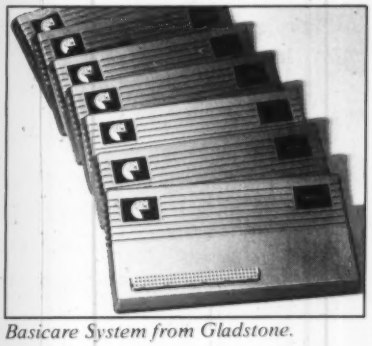
Flexidraw Light Pen.

series, C. Itoh Prowriter, and Okidata 84.

The resolution of the *Flexidraw* system is remarkable, and for the great capability, is priced very reasonably. Look for a full-blown review of the product in the next issue of *Creative Computing.*

Gladstone Electronics

Gladstone Electronics announced the Basicare Modular Expansion system for the C-64. This consists of a base plug-in



Basicare System from Gladstone.

ROM device called Persona and a series of user-selectable modules.

The Persona device plugs into the C-64 expansion port and offers four soft-switched ROM cartridge slots. It also provides 8K of additional software in ROM with several C-64 enhancements. These include extensions to Basic, i.e. APPEND and OLD, a complete machine code assembler, a simple but comprehensive sound chip controller, and easier use of hi-res graphics.

As a stand-alone device, the C-64 Per-

Commodore 64 Magic Desk I

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The MAGIC DESK Typewriter works just like a real ELECTRIC TYPEWRITER ...and it's COMPUTERIZED. All the filing is *electronic*. Excellent sound effects and screen animation make typing fun, whether you're typing letters, reports or memos...and the built-in filing feature makes MAGIC DESK useful for keeping names and addresses, home inventory lists, insurance information and more.

Your COMMODORE 64, COMMODORE DISK DRIVE and MAGIC DESK are an unbeatable combination. Filing operations are automatically linked to your Commodore disk drive—but you don't have to know any commands—just "file" the pages you type in the file cabinet and your text is automatically saved on diskette. There are 3 file drawers with 10 file folders in each drawer and 10 pages in each folder.

To PRINT a page you've typed, just "point" at the picture of the printer and your pages are automatically printed on your COMMODORE PRINTER or PRINTER/PLOTTER. If you want to erase what you've typed, the WASTE-BASKET under the desk lets you "throw away" pages. There's even a DIGITAL CLOCK which helps you keep track of time while you're typing.

Not only is MAGIC DESK easy to use...it's hard to make a mistake! Just press the COMMODORE key and one of several "help menus" appears to tell you exactly what to do next. Special messages show you how the various picture commands work and help you when you make a mistake. Help messages also show you how to use the printer, filing cabinet, digital clock and wastebasket.

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sona has value and will appeal to serious-minded Commodore hobbyists. In addition, it can become the heart of an expansion system with dramatic potential.

Memory expansion modules in increments of 16 or 64K will be available and can be stacked to a theoretical limit of 1 Mb. Bank selection can be done via the Minimap module which addresses memory in 8K chunks. Pericon modules (peripheral controllers) provide "real world" interfacing. The newest Pericon module incorporates relays that can be used to control motors. At the show, a Lego "robot" was controlled by a C-64.

Soon to be released is a Z80 module complete with 64K RAM on board and a CP/M disk controller.

Tymac Inc.

Tymac Inc., demonstrated its Universal Tape Interface and Duplicator which allows users of Commodore computers to use almost any audio tape recorder with their computer in place of the Datasette by Commodore.

With the product, owners of C-64s, Vic 20s, CBMs, and Pets can save and load cassette programs without investing in a dedicated cassette unit. The UTID device includes three LED indicators to show operation status. It also contains sophisticated circuitry which restores information from distorted audio waveforms, so transfer takes place with high reliability.

In addition, the UTID features duplication capability, allowing it to be used in conjunction with a second recorder to make backup copies without having to load to and save from computer memory.

Suggested retail price is $50.

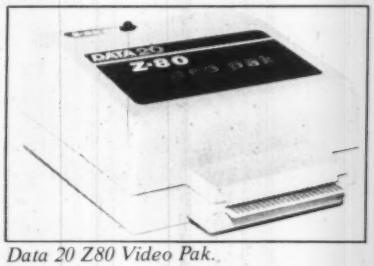
Data 20 Corporation

The Data 20 Corporation introduced some very nice packages for the C-64. The Z80 Video Pak features a Z80 microprocessor that offers C-64 owners the ability to use CP/M software. In addition, the package includes an 80-column adaptor and bundled word processor and spreadsheet programs.

The Z80 processor runs the SB-80 operating system, which is also included in the package and is a CP/M workalike. The 40-column Commodore version of CP/M will also run on the Z80 Video Pak.

The 80-column cartridge creates its own character set for excellent display on a monochrome monitor. It also runs Commodore Basic in the 80-column mode.

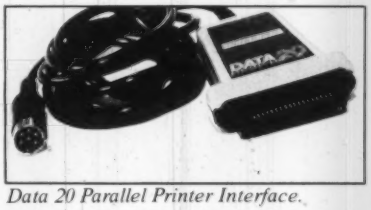
The two software programs included in the Video Pak are Data 20's *Word Manager* and *Plan Manager*, on disk.



Data 20 Z80 Video Pak.

Both come with a "feature strip" which can be placed above the top row of keys for easy reference.

Data 20 also introduced a $50 parallel printer interface for Commodore computers. Under normal operation, the interface is used with a parallel ASCII (non-Commodore) printer to emulate a Commodore 1525 printer.

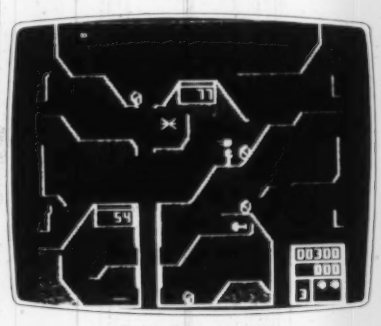


Data 20 Parallel Printer Interface.

If you use a dot-matrix printer that can redefine its character set by downloading a new font from the computer, you can print special graphics characters. Alternatively, characters can be translated into English labels.

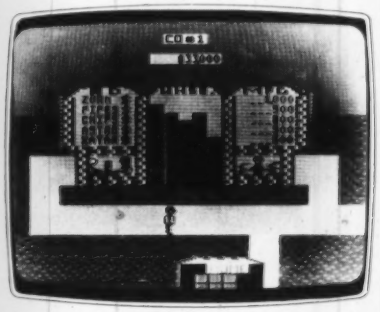
Creative Software

Creative Software has added three new C-64 titles to its line. *Crisis Mountain* is an action game developed originally for the Apple. You control the intrepid explorer, and keep him from stepping on traps, bombs, and blood-sucking bats. As he winds his way through dark caverns, two buried time bombs tick away in remote caves—and if not deactivated, they will blow up the mountain (and you with it).



Crisis Mountain

In the Chips, a popular Vic 20 program, is now available for the C-64 as well. This educational program pits the player against a rival computer software company. The player must make shrewd



In the Chips

pricing, inventory, and budgeting decisions to "out-profit" the competition. A balance sheet displayed on the screen shows how well each company is doing.

I Am the C-64 is a video tutorial that takes the new computer user step-by-step through the capabilities and functions of the Commodore 64. It is a colorful program that enables the user to learn quickly.

ONCE AGAIN, THIS IS YOUR C-64 AT YOUR
SERVICE. IN THIS VOLUME, WE WILL
DISCUSS HOW YOU CAN TALK TO ME.
FIRST, THERE IS SOMETHING YOU SHOULD
UNDERSTAND. I AM ONLY A MACHINE TO
BE USED AS YOUR TOOL. REMEMBER,
I CAN DO NOTHING WITHOUT YOU!
PRESS ANY KEY TO CONTINUE (F1 REVERSE)

I Am the C-64

I Am the 64 is available in two parts: The "Introductory Series," and the "Advanced Series." All three programs are $34.95 each.

Softsync

Softsync has released *Mothership* which unites three different video game concepts in a single story line.

The first screen is in first-person perspective, and you find yourself beneath the mothership fighting off drone ships. In the next screen, you are in the bowels of the mothership, climbing up to get control. The third screen presents you with the challenge of taking over an alien planet.

To complete the mission, you must fly the mothership back to its home planet

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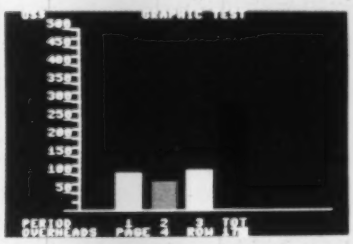
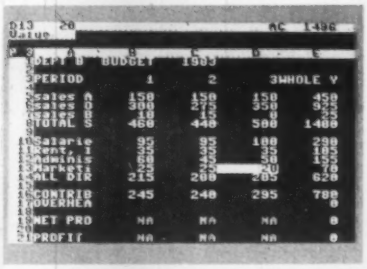
Calc Result Easy is a simple-to-use spreadsheet program for the Commodore 64. It includes 254 lines × 64 columns, built-in graphics, and flexible printout formats. Plug-in cartridge... just plug it in and its ready. Perfect for cash flow analysis, personal net worth, IRA analysis, travel expenses, credit card expenditures, gas and electricity bills, etc.



Calc Result Easy $49.95

Calc Result Advanced gives you 32 pages of interrelated information. The three-dimensional feature allows you to consolidate calculations in summary format. Calc Result Advanced comes on plug-in cartridge and disk. Disk drive required.



Calc Result Advanced $99.95

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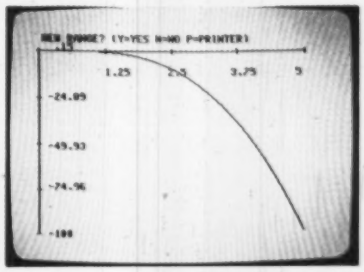
Addresses, telephone numbers, appointments, birthdays, or records–whatever you want to remember–put it on DIARY, an electronic notebook for home use. DIARY comes on a plug-in cartridge. It's easy to use and easy to learn, giving you the flexibility to design a personal calendar or address book.

Diary $29.95

Turn statistical information into graphic format

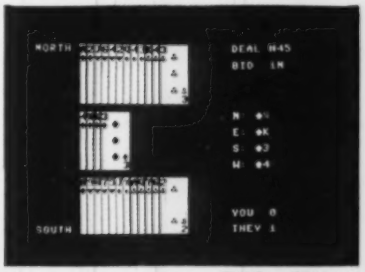
GRAF 64 converts mathematical functions into graphical analysis on the Commodore 64. An ideal program for studying math. Define a function, set the limits of an axis, plot a graph and display the extreme points, intersection values, etc.



Graf 64 $29.95

Develop your bridge skills

Whether you're an experienced bridge player or a beginner, polish your skills or learn the game with BRIDGE 64. Play North-South, then switch to East-West in the same deal, the return to that deal again and test your skill with a different strategy.



Bridge $39.95

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handic software

Handic Software, Inc.
Fellowship Business Center
520 Fellowship Road, B 206
Mount Laurel, NJ 08054
Phone (609)663-0660

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CIRCLE 159 ON READER SERVICE CARD

and shoot out the negative energy zone. The game lists for $29.95 on disk, $24.95 on cassette.

Broderbund Software

Broderbund has now translated many of its most popular titles from the Apple and Atari computers to the C-64. *Serpentine* takes you back to an age when mighty serpents ruled the decaying pathways of a vanishing civilization. Your serpent is fast—but the enemy snakes are big, cunning, and hungry.

Serpentine serves up 20 different maze configurations and offers many levels of game play.

Seafox puts you at the controls of a specially designed submarine. Your mission is to wipe out a convoy of enemy chips and their escorts. Your maneuvering ability and fortitude will be put to the test as you dodge exploding depth charges and try to escape from enemy torpedoes. Both games list for $34.95.

Operation Whirlwind is a unique war game in which your mind becomes your most powerful weapon. Strategy, not force, is the key to victory as you move your battalion through a series of testing skirmishes and battle actions.

The game requires the concentration of chess—a typical game may take from one to three hours—and the ability to master the many tactics of front line combat. The game lists for $39.95.

Matchboxes is a game that will bring the whole family together for hours of fun. As a matching game reminiscent of TV's "Concentration," *Matchboxes* puts your powers of recall to the test. The game fills your screen with a grid of 36 numbered boxes. Hidden behind these is a delightful collection of colorful characters, creatures, and objects, each with its own catchy tune. Your goal is to match identical squares.

To make the game challenging for all ages, there are additional modes that require players to solve difficult word puzzles. Game variations include puzzles that are frontward, backward, or scrambled. Players can also create their own unique word puzzles. *Matchboxes* lists for $29.95.

Drol began as a unique and delightful Apple game, and now is available for the C-64 as well. The multi-levels of game play in *Drol* are as challenging as they are unusual. Never has there been such an amusing or unlikely collection of foes in one game. Players must cope with airborne turkeys (that cook up into Thanksgiving roasts when you zap them), overweight hopping monsters, lightning bolts, scorpions, lizards, a magnet-tossing witch doctor, and more.

Players of *Drol* take on the task of pursuing a little girl and her propeller-beanied brother, who have wandered away from their mother. Mesmerized by the spell of a witch doctor, the children drift aimlessly through the scrolling underground corridors of an ancient civilization. A rocket backpack, protective laser gun, and wide-screen radar scope prove indispensable as you try to come to the rescue. The game lists for $34.95.

Broderbund also announced that it has reached an agreement with Ultrasoft to write, produce, and market a Commodore 64 version of *The Mask of the Sun,* a best-selling graphic adventure game for the Apple. It will be Broderbund's first adventure game.

In *The Mask of the Sun,* you take on the role of an archaeologist, adventurer, and treasure hunter in search of an ancient artifact. Faced by a debilitating condition brought on by an overzealous examination of your last acquisition, the Mask offers the only hope for your recovery.

The game features superb animation, detailed graphics, sound effects and an interpreter that allows you to converse in everyday language. *The Mask of the Sun* will retail for $39.95.

Datasoft

Datasoft had two interesting offerings on the CES floor. *Dallas Quest* brings J.R. Ewing and family from the TV screen to the computer screen. This game of strategy and chance features multiple hi-res screens, drawing the player into the sumptuous Texas mansion of Southfork. The trail soon leads into the steamy jungles of South America to rub elbows with (and try to outsmart) crafty J.R.

The Dallas Quest from Datasoft.

The player is one of the world's great detectives, hired to find a missing map which reveals the location of a multi-million dollar South American oil field. With wit and luck, the player must solve the challenge of each scenario—in order to move to the next scene and a step closer to the map. The product will list for $34.95.

Also to the C-64 from Datasoft comes another TV personality: that beloved animated eraser, your friend and mine, Gumby. Datasoft has obtained a licensing agreement with Art Clokey Productions, stipulating that Gumby shall appear solely in educational packages—software designed to help children learn. A series of Gumby packages is planned, but not much more information was available at press time.

Interactive Picture Systems (IPS)

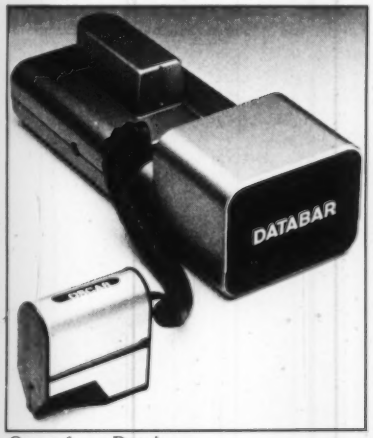
Interactive Picture Systems announced a version of *Movie Maker* for C-64 computers. *Movie Maker* is a superb animation package originally designed for the Atari computer (a full review of the product appears elsewhere in the magazine). The C-64 version will include an enhanced sound module, and sport many of the same features as the original.

Databar Corporation

Databar Corporation announced it was shipping the Commodore 64 version of Oscar, an optical bar-code scanning reader which lists for $79.95.

Oscar allows users to scan printed pages of bar code to enter programs into a computer. Programs are entered quickly, error-free, and without time-consuming keyboard entry.

Databar plans to retail bar-coded software and publish a magaine, *Databar,* which will include multiple bar-coded programs.



Oscar from Databar.

Well, there you have it. Catch you next time, and until then, keep hacking away. And good night, Mr. Tramiel, wherever you are. END

Firms Mentioned in This Column

Commodore Computer
1200 Wilson Dr.
West Chester, PA 19380
(215) 431-9100

Human Engineered Software
150 North Hill Dr.
Brisbane, CA 94005
(415) 468-4111

Inkwell Systems
7760 Vickers St.
San Diego, CA 92138
(619) 268-8792

Gladstone Electronics
1585 Kenmore Ave.
Buffalo, NY 14217
(716) 874-5510

Tymac Inc.
129 Main St.
Franklin, NJ 07416
(201) 827-4050

Data 20 Corporation
2301 Moulton Parkway
Suite B10
Laguna Hills, CA 92653
(714) 770-2366

Creative Software
230 East Caribbean Dr.
Sunnyvale, CA 94089
(408) 745-1655

Softsync Inc.
14 East 34th St.
New York, NY 10016
(212) 685-2080

Broderbund Software
17 Paul Dr.
San Rafael, CA 94903
(415) 479-1170

Datasoft Inc.
9421 Winnetka Ave.
Chatsworth, CA 91311
(213) 701-5161

Interactive Picture Systems
270 Park Ave. South
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Kathy Grubbs, Program Director, E. Whittier (CA) Middle Schools

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Apple Cart

Stephen Arrants

Welcome to another Apple Cart. There are a few noteworthy dates this month. Cray Research, Inc. was founded on April 6, 1972. The Cray computers are the most powerful in the world. Even a confirmed Apple addict like me would grudgingly admit that. In April 1966 IBM introduced the 360 series computers. This third generation of computers was innovative in its use of 9-track tape drives, multiple spindle disk systems, and 8-bit bytes to represent characters.

And for trivia buffs, in April of 1979 a Cray 1 computer calculated this number—(2^{44497})-1—the largest prime number known to man. Calculating large prime numbers isn't something I would recommend doing with your Apple unless you want to keep it busy while you are on vacation.

This month: a round up of new products for the Apple, April contest results, and an apology for giving you instructions on how to pirate software.

InvisiCalc

Sometime back, I promised a copy of *InvisiCalc* to the reader who answered a survey with the most creative answers. In a following issue I supplied directions for making your own copy of *InvisiCalc*. Richard Kirsner of CE Software called me recently and chided me of fostering software piracy. CE Software holds the copyright on *InvisiCalc*. To make amends (and avoid a costly legal battle that would cause me to run away to Hudson's Bay) I promised a short review.

InvisiCalc is designed to operate on every piece of data processing equipment known to man. Easy to learn, easy to use, and just as easy to forget, *InvisiCalc* proves that there is less to spreadsheets than meets the eye. Just boot it up, walk away, and don't come back.

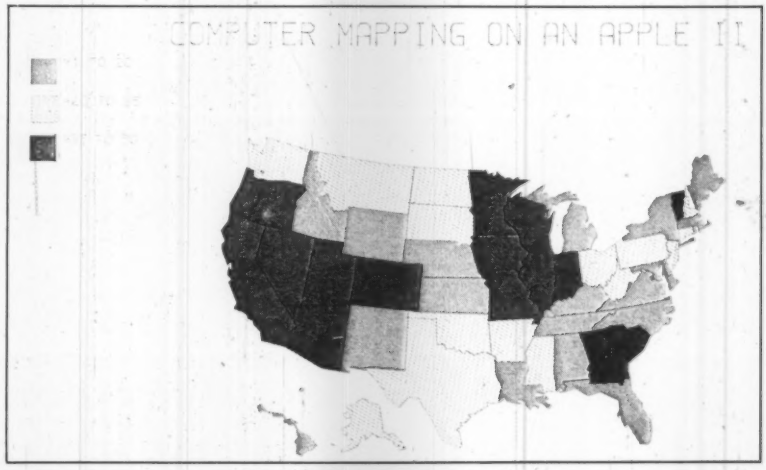
This product is unique. Other spreadsheet software requires tedious data entry and meticulous attention to detail in order to play at "What if . . . ". *InvisiCalc* solves spreadsheet problems in seconds by asking the question "Why bother?" For many small businesses—as well as the Fortune 500—*InvisiCalc* can help decrease operating expenses. No expensive monitors, printers, photocopiers, or data backup is required. In these turbulant economic times, it is nice to find a product that leaves no audit trail.

We tested *InvisiCalc* on every available machine at our offices. It performed flawlessly on everything from a Timex-Sinclair 1000 to a Wang Professional Computer. We had some problems using it with a Sanyo microwave oven, but an update is in production.

New Products

CRIS Polymaps

Computer maps are very effective tools for analysis and business presentation. It is unfortunate that creating maps with a microcomputer is an expensive and tedious process. CRIS has a product that goes beyond bar charts, pies, and line graphs. The *Polymaps* package



CRIS Polymaps 1.0.

Leonardo Da Vinci Would Have Loved DOUBLESTUFF Plus™

designed by Louis Bonfiglio

Shown here: Actual inset of artwork done using doublestuff plus™ Software on an Apple IIe.

If Leo were here today, he'd be using **Doublestuff Plus** on his Apple IIe.

On the main menu, he would have his choice of **SIX programs:**

1. Super Drawing
2. Drawing
3. Shape Editor
4. Character Set Editor
5. Shape Shuffler
6. Doublestuff Basic

Doublestuff Plus is the now famous **Doublestuff** with a **complete drawing package** added. Leo could now create artwork in 16 true colors. Using double high resolution (560 x 192 pixels), he can draw in one of two graphic modes: 560* or 140*. No programming necessary.

Using your Koala™ pad, keyboard or joystick, you can be as artistic as Leonardo DaVinci and create your own masterpieces.

To order, send check or money order in the amount of $69.95 New York State residents add sales tax to:

Doublestuff Software Inc.
2053 West 11th Street • Brooklyn, NY 11223
Tel: (212) 449-6300 or 1-(800) 221-9901

Dealer Inquiries invited.

Requirements: Apple IIe—either 80 column card for double Lo-Resolution. Extended 80 column card for double Hi-Resolution.

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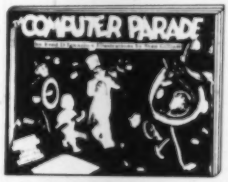

Let Colonel Byte take your child on a trip through Cybernia

They'll learn all about computers along the way!

Growing up in the computer world will be easier if your child understands computers. And there's no better place to start than with the computer that's in your home—and with the help of this delightful book.

Computer Parade traces the adventures of Katie and her brother after they fall into the family computer. It reads like a story book. Yet it actually teaches the basics of computer operation.

Any youngster age 4-10 will delight in *Computer Parade*. It's easy to read and richly illustrated in full color.

Help your child grow up computer literate by ordering your copies now.

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CODE 14012

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makes business and educational graphics practical and affordable.

The software is menu driven and includes a library of sample maps. Creating your own maps is very easy. The menus ask for relevant information and a map to your specifications is quickly produced. The only drawback is the slow speed of map generation. This is due to the amount of memory needed for the calculations and the speed of the 6502 chip. After looking at the results, the slow speed doesn't really make a difference.

Polymaps features color output via Apple II graphics, Houston Instruments and Hewlett-Packard plotters. If you don't have a plotter, maps may be produced on any dot-matrix printer which uses ASCII characters. Even without a plotter the results are acceptable.

Included with *Polymaps* is a polygon editor and a database manager. These provide easy entry of input from data files or from the keyboard. An integrated statistical package generates crosstabs, breakdowns, descriptive statistics, frequencies, and correlations, thus making your data even more understandable. Data may be output to *A-stat, Apple Business Graphics,* and other packages.

Polymaps is an excellent tool for business analysts, marketing and government planners, and educators. It is simple to use; the documentation is clear; and it is a good value at $185.

Two Accessories for the Apple II and II+

The Apple II and II+ suffer from two glaring design flaws: to repeat a key, you must press both the key *and* the REPT key. And to have upper- and lowercase you must install a lowercase adapter and make the famous SHIFT-key mod. Pacific Computer Accessories has two products which overcome these flaws with a minimum of effort.

The AutoRep 1.3 keyboard enhancer features an easily adjustable time delay between first keypress and start of normal speed repeat, from 0 to just over 3 seconds. Higher speed auto repeat is initiated by also pressing the REPT key. One unique feature is that the rate of high speed repeat is adjustable from normal to over 200 per second. This is helpful when customizing for 40-, 80-, and 132-column displays.

AutoRep 1.3 also includes an external on/off switch, a special terminal for easy connection of SHIFT-key adapters, and a compact design. At a suggested price of $21.95 AutoRep 1.3 is a good value.

Another product is ShiftKey 1.0, a general purpose adapter to neatly and securely make the one-wire Game I/O SHIFT-key modification required by most 80-column cards and lowercase adapters. Full access to the game socket is maintained for joysticks and paddles, while extra solder pads increase access to I/O connections for experimenters. Price: $7.95.

Both products are designed for most Apple II and II+ computers now in use (those with discrete keyboard encoder boards, late Rev. 6 and on).

TK! Solver for the Apple IIe

TK! Solver from Software Arts is now available for the Apple IIe. *TK! Sovler* is an equation processor which works in the same manner as a spreadsheet. Its basic strength is its backsolving capability, which allows you to solve for any of the variables in an equation without restating the problem. *TK! Solver* offers several unique features, including iterative solving, list solving, tables and graphs, and automatic unit conversion. Thirty-four functions are built-in, and you can create your own.

Two packages are available: *TK! Solver* and *TK! SolverPack for Introductory Science.* The *TK! SolverPack for Introductory Science* is geared for high school and college level chemistry, biology, and physics. The programs contain models with the equations, values, and tables needed to solve particular problems in these fields, and are designed to be used as a supplement to basic textbooks and lectures. Other *SolverPack* applications are available for mechanical engineering and financial management. Others under development include building design and construction, electrical engineering, and statistics. For a complete review of *TK! Solver* see *Creative Computing,* November 1982.

Paper Tractor

Pin-feed printers require additional hardware to use single sheet paper. Feed attachments can cost upwards of $100. Paper Tractor is an inexpensive alternative that allows your printer to use almost any piece of paper. Just slip the paper into the Paper Tractor, feed it into your printer, and print away. It will work with almost any printer. If you occasionally use single sheet paper, the Paper Tractor is a useful accessory at $11.95.

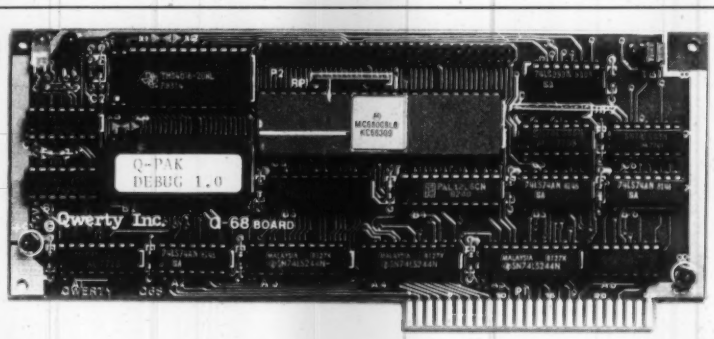
International Apple Core

The International Apple Core, the world-wide association of Apple computer users, has opened membership to individuals and corporations. Previously, the group was a federation of more than 400 user groups in the United States and 33 other countries.

The IAC was founded in 1979 to provide support for users of Apple computers. At that time the organization chose to focus on user groups as the primary means to provide support. At that time there were only 75 user groups and close to 100,000 Apple computers in the world.

President Dave Alpert says the change reflects IAC's response to changes in the computer market. "With the changes in volume and with new models, we've seen a new type of computer user," Mr. Alpert said. "In 1979 computer users were very technical. Now they care more about what their Apples can do for them than they care about how their Apples actually work."

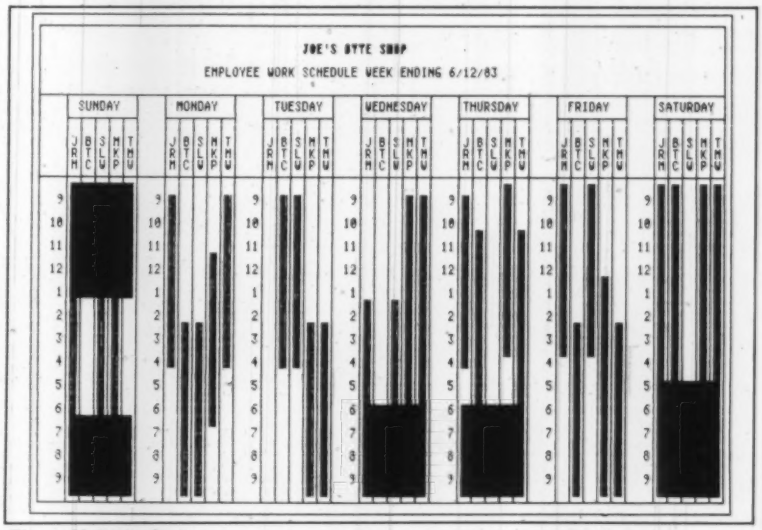
Apple Computer User's Support Representative James Hoyt notes, "Apple sees these developments as a positive step." IAC membership dues are $30 per year. Sure, it's more expensive than some products, but it will be the best $30 you spend on your Apple this year.



QPAK-68.

QPAK-68

An Apple user's favorite chip is the 6502, the heart of his favorite machine. Apple is also using the 68000 from Motorola in the Lisa and the Macintosh. If you would like to run some of the applications designed for these or other 68000-based machines, QPAK-68 from



Charts Unlimited.

Qwerty Inc. could be what you have been waiting for. QPAK-68 is an add-on board with software that turns the Apple II into a low cost 68000 assembly language development system. It is intended for anyone who wants an inexpensive way to program and learn the 68000. At $695, it is priced far below the $10,000 that many such systems have cost until now.

QPAK-68 includes a plug-in board to run 68000 programs, a combined Editor/Assembler to create 68000 source code, a debugger for testing it, and documentation and reference material for learning how the 68000 works.

The board plugs directly into an Apple slot and uses the 68008, a software compatible 8-bit version of the 68000. The 68008 processor is driven from the Apple 7.16 MHz clock, so it can run in parallel with the 6502. It can be started, stopped, or interrupted at any time from the Apple. What makes this board unique is its ability to run directly from Apple memory. It shares the full 64K memory space of the Apple and can access the same memory and peripherals as the 6502, including the hi-res screen display. In addition, more than one board may be inserted to run in a multiprocessor mode, if desired.

The board has a local memory of 8K of EPROM and 2K of RAM, expandable to 32K and 8K respectively. An expansion connector on the top edge connects to more local memory or future 68000 peripherals.

The EPROM-resident debugger displays five screen windows to monitor or change registers or memory or to set breakpoints. It also includes instruction single-step and disassembly.

The source code development package comes on an Apple-compatible disk and consists of a combined Editor and Macro-Assembler. The system is capable of quick editing and assembly of large 68000 programs in excess of 8K of object code directly out of RAM at high speed or larger programs using the Apple disk.

You won't be able to run *Mac Write* or some of the Macintosh software, however. The value of QPAK-86 is educational. It appears the 6800-based systems will command a large market in the future.

Two New Sprite Boards from Synetix

Two additional versions of the sprite animation peripheral card for the Apple Computer are now available from Synetix, Inc. The Sprite I retails for $149 including software. Via keyboard, you can define, assemble, and move sprites for fast action games or educational programs. Sprite II—$249 retail—adds a sound generator, speaker, and software for programming realistic sound effects synchronized to the sprite action. Both Sprite I and Sprite II are derivations of the SuperSprite (reviewed in our February 1984 issue) which combines actual speech with sound and animation.

A unique feature of the sprite boards is multi-plane graphics whereby each sprite occupies space on a separate video plane and can therefore move freely in front of or behind another sprite. Up to 32 sprites can occupy the screen simultaneously.

Charts Unlimited

If your taste in graphics runs to the practical, *Charts Unlimited* from Graphware is for you. You can design your own charts, forms, and graphs with a minimum of effort.

Charts Unlimited was originally designed for systems engineers, but it is finding increasing use among engineers, doctors, architects, builders, managers, and educators.

Thirty-six predefined objects and 36 predefined symbols are supplied, but you are not limited to these for creating drawings. Up to 26 alternate object/symbols can be created and stored with each file.

The drawings are created on a grid of 123 columns by 90 rows. You can mix text with graphics anywhere on the grid.

Although *Charts Unlimited* cannot do the detailed scaling necessary for precise architectural work, you do get an excellent representation of a floor or a building plan quickly and easily. It is certainly easier to use than the $400,000 systems used by professionals, since changes in plans can be made and seen in a short time.

Charts Unlimited is structured like *VisiCalc* in the way commands can be called up. A status line shows you what mode you are in, and command execution and layout are similar. The documentation is good, but since the program is menu driven and filled with help screens, you may not need to refer to it.

Printouts are via any dot-matrix printer and some daisywheel printers. No other software or hardware is needed to run *Charts Unlimited.*

The greatest strength of *Charts Unlimited* is its ability to play "What if . . . " Any changes in a graph, form, plan, or chart can be seen immediately. Re-formatting is automatic and precise. *Charts Unlimited* can't do everything: you can't have color graphs or charts; it isn't good enough for precisely detailed work; and it can be a bit slow with a large worksheet. But at $195 the tradeoffs are acceptable, and it is a fine value.

Protecting Your Apple

The most important—and least purchased—peripheral for the Apple might be a fan and surge protector. I admit, even I would rather spend money on a new terminal package, game, or other piece of software. This past summer our offices were under "de-construction" and we had no air conditioning. Just 20 feet from my office window, New Jersey Conrail runs electric commuter trains. Between the heat and the 50,000 volt wires, our equipment was under severe strain. For a while, we greeted each other with "Reboot!" instead of "Good Morning!"

Super Fan II with Zener ray protection helped solve the problem. The unit

sits along the left side of the Apple, hooking into the side vents.

Surge protection is accomplished in two stages. The first stage protects against such things as lighting surges and discharges of stored electricity in reactive circuits. The second stage is a high speed section. It will clamp 20 to 100 times faster than the Apple system, providing an additional 1500 watts of surge protection. Line power filtering is also supplied.

RH Electronics includes an air flow seal kit when using the unit on the Apple monitor stand. The foam rubber padding and brackets are a necessity for monitor stand use.

If your Apple is stuffed with peripheral cards and living in an unfriendly environment such as a basement, den, or anywhere near small children, Super Fan II is good insurance. Believe me, a crashed disk is one thing; looking at your motherboard perform a scene from *Star Wars* can be cause for a nervous breakdown. (See our May 1984 issue for an in-depth look at power line conditioners.)

The April Contest . . . .

Some were funny and some were . . .uh. . .well, I always thought that IBM-PC owners were the ones without a sense of humor. Five readers sent in real ads, clipped from the magazine. Not funny, guys. In any case here are the two best entries.

CompuChef

Now, for the first time ever, your Apple computer can not only prepare your menu but cook your entire meal!

Imagine waking to the aroma of Eggs a la Pascal with toast and Applesoft jam or coming home to a fillet of floppy disk. And snacks? You bet! COMPU-CHEF's special dip goes great with both TTL and CMOS chips. Yes, COMPU-CHEF can do all this and more! Our exclusive ESP operating system senses your mood and selects a menu accordingly.

COMPU-CHEF comes complete with two dishwasher safe robotic arms, mobile base and chef's hat (state 9 or 12 inch monitor size).

Just $1999.99 from SCAMCO, write for address.

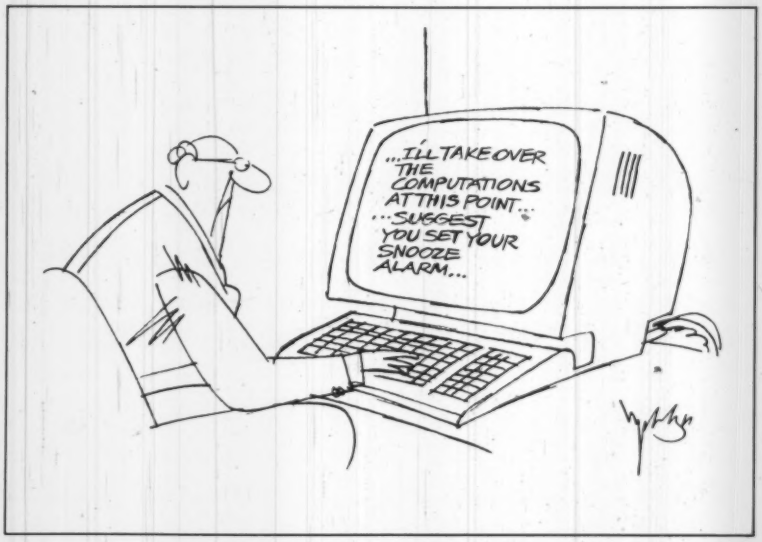
Requires an Apple II, II+, IIe, Franklin Ace, or Apple compatible clone, 256K RAM, five disk drives (or one hard disk), and a BS Degree in electrical and mechical engineering (some assembly required).

Dean Carter of Santa Barbara, CA wins Artsci's *MagiCalc* spreadsheet software.

Möbidisk

Inifinitely expand the storage capacity of your Apple. Uses principles of möbius surface to utilize maximum total area as a read/write medium. Single surface is easier to protect and clean. Möbidisk folds on itself to become its own protective storage and shipping "kleinapple" which bottles up all the stored information on this amazing new product. Order yours today from Cap'n Ahab's White Whale Xypherworks. Phone orders call (314) 159-2653. Bank of India Cards welcome.

The second prize goes to Frank Piedad of Greentown, OH. A year's subscription to *Creative Computing* is on its way.



Readers Respond

The response to a question I had in the January '84 column is still coming in. I asked readers why you get ROGRAM TOO LARGE instead of I/O ERROR when issuing a CATALOG with the drive door open. We'll talk about that next month. Some of you provided interesting answers and some intriguing DOS information.

I've also received some response to the question on why *AppleWriter* sometimes drops characters as you type. It appears that it is not a bug in the program. Apple itself had some complaints about the problem. If you type too fast, you don't hit each key correctly. So, slow down, learn how to type correctly, and the problem should disappear.

If you have any Apple questions, send them to me here at the magazine or leave them on the *Creative Computing* SIG. If you use MCI mail, you can send them to me at SARRANTS. I read each and every letter, but because of space limitations, I can't answer all of them here. An SASE will help assure a reply, though. See you in May.

Firms Mentioned in This Column

CE Software
801 73*rd* St.
Des Moines, IA 50312

CRIS (Community Research
& Information Systems)
Box 1280
Ripley, NY 14775

PCA (Pacific Computer Accessories)
P.O. Box 25730
Honolulu, HI 96825

Software Arts
27 Mica Lane
Wellesley, MA 02181

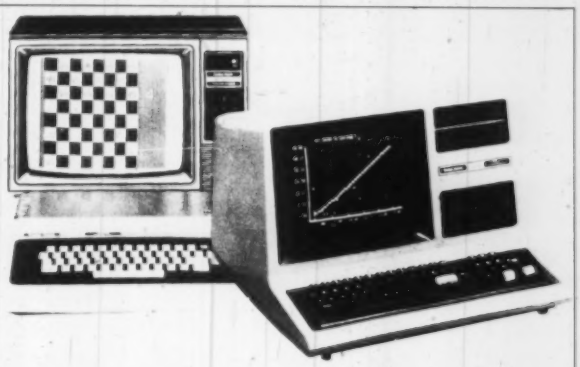
International Apple Core
908 George St.
Santa Clara, CA 95050

Qwerty Inc.
9252 Chesapeake Dr.
Suite 600
San Diego, CA 92123

Graphware
5084 Mosiman Rd.
Middletown, OH 45042

RH Electronics
566 Irelan
Buellton, CA 93427

The Paper Tiger
One South Fairview
Goleta, CA 93117 ■



TRS-80 Strings

Stephen B. Gray

The view from cage 62 in the Fort Worth zoo includes the Tandy 2000 computer, a TV-based computer course, a disk-directory program, Radio Shack's Color Mouse, a *Color Computer* magazine, and a short program that creates unerasable names.

Tandy 2000

If you cain't beat 'em, jine 'em. And so late last year Radio Shack announced the Tandy 2000 (Figure 1), which uses the Microsoft MS-DOS operating system featured in the IBM PC, and which will run much of the IBM PC software.

Note the name; it is not the Radio Shack 2000. Tandy's chairman of the board, CEO, and president, John Roach, put it this way at the introduction, "Because of this product's high performance and because of the environment that this machine is designed to be utilized in—the office—we have chosen a new name, Tandy TRS-80 Model 2000. A name that clearly differentiates the product from our consumer image—Radio Shack—and implies the future as we look to the year 2000."

For many people, Radio Shack's image is that of a hobbyist chainstore selling cheap audio equipment and electronic parts. Hence the use of the Tandy name for the 2000, just as Matsushita invented the Technics name for its high-end hi-fi line, to get away from the low-end image attached to the Panasonic name.

Powered by the Intel 80186 microprocessor, the Tandy 2000 has a full 16-bit data path, and a clock speed of 8 MHz (the IBM PC runs at 4.7 MHz). The 2000 disk drives store 720K each, while the IBM PC drives have a capacity of 160K (320K optional). The 2000 has a maximum color resolution of 640 x 400 and eight colors; the IBM PC has 320 x 200 resolution and four colors.

The Tandy 2000 is available in two configurations, both expandable to 768K of RAM. The basic system, with 128K RAM and two 5 1/4" floppy disk drives (total of 1.4 megabytes of disk memory), is $2750. The Tandy 2000 HD has one floppy disk drive, 256K of RAM, and a built-in 10-megabyte hard disk; $4250.

Either version can operate the 12", $249 VM-1 hi-res monochrome monitor, or the 14", $799 CM-1 hi-res color monitor. The 640 x 400 hi-res graphics are optional, at $449 for monochrome, $199 for color. Without the option, the color resolution is medium-res, 320 x 200. There are no medium-res monochrome graphics.

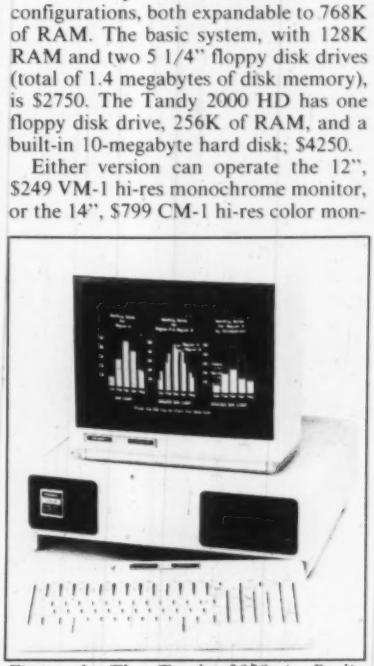


Figure 1. The Tandy 2000 is Radio Shack's bid to get on the IBM bandwagon, with Microsoft's MS-DOS operating system plus hi-res color graphics.

Text is displayed in 25 lines of 80 or 40 characters.

A new twist for the new machine: software companies will be allowed to sell software for the Tandy 2000 under their own brand names.

Tandy 2000 Software

The software packages available for the Tandy 2000 include word processing ($140 *PFS:Write*, $375 Microsoft *Word*, $250 *MultiMate*), graphics ($140 *PFS:Graph*), electronic filing ($140 *PFS:File*, $125 *PFS:Report*, $595 *dBase II*), spreadsheet analysis (Microsoft's $249 *Multiplan*), small business accounting (MAI/Basic Four: $495 general ledger, $495 A/R, $495 A/P, etc.), communications ($50 *Videotex Plus*), programming languages ($300 MS-Pascal compiler, $300 MS-GW Basic compiler, $350 MS-Fortran, $100 MS-Assembler, $585 Cobol), and personal programs ($125 *Home Accountant Plus*).

The list of IBM PC packages that will *not* run on the 2000 includes *Smartcom* (Hayes), *Peachtext* (Peachtree), *EasyWriter* (Info. Sys. Ltd.), *Lotus 1-2-3* (Lotus), *WordStar* (MicroPro), *SuperCalc II* (Sorcim) and *VisiCalc* (VisiCorp).

A full review of the Tandy 2000 will appear later in *Creative*.

Academy On Computers

The first hands-on, television-based

computer course was introduced at the beginning of this year. The 12-week "Bits and Bytes" course was broadcast initially in ten PBS (Public Broadcasting Service) regions throughout the country, and will be repeated in April.

Viewers who participate fully, by enrolling and paying the $70 fee, receive extensive study materials (Figure 2), a software program tailored exclusively to the series, and personal assistance via a hotline staffed by local computer experts.

The dozen half-hour programs have titles such as How Programs Work, Storing Information, Communication Between Computers, Computer Languages, Simulations and Games, Computer Music, and Computers at Work.

Figure 2. The courseware for the Academy on Computers "Bits and Bytes" series provides computer training via television.

Course software and text materials are offered by the sponsoring Academy on Computers (part of WNET/13 in New York, NY) for the TRS-80 Model III (disk or cassette-based), as well as the Apple II Plus, Atari 400/800, Commodore Pet and 64, IBM PC, and TI-99/4A.

The course was introduced to 13,000 Canadian enrollees and millions of viewers in 1983. Canadian actors play student and teacher in the series.

For further information, contact your nearest public television station.

Disk Catalogs Revisited

Last August (p. 240) we took a look at the Sams *Master Directory III*, a $39.95 disk catalog program. Such programs are very useful when your disks begin to proliferate, and you have trouble remembering which program (or file) is on which disk.

With the Sams program, you give each disk a number, then let the program read the directory of each disk. Within a few minutes you have created a master directory that you can search for a program (or file) in several ways, and also display or print reports in several ways.

Let's look at another disk catalog program, which has a few more features (and a higher price).

SuperDirectory

Computer Shack offers, among its many games and utilities for the TRS-80 Models I/III and 4, *SuperDirectory*. At $49.95, it is advertised as "the fastest, most efficient library catalog utility on the market....will sort your complete disk file in a matter of seconds on filespec, disk number, or remarks.... Reads any normal DOS and density...."

Both manual and program are user-friendly. The small 41-page manual, written in semi-conversational style, tells you all you need to know in a very simple and direct manner. The manual also has a tight pocket that keeps the disk from falling out, which is a problem with many other disk-toting manuals.

SuperDirectory is very easy to use because it has many menus; you don't have to memorize anything. The first menu asks which printer setup you will be using. Then you get the main menu, with 18 choices (Figure 3). The manual suggests the first thing to do is organize your disks, set up an indexing system, and put a label on each disk. To get you started, *SuperDirectory* includes a label-making program.

Type in L, for Load Directory, and you will be prompted for a disk number, which must be a combination of three or four numbers or letters. Then you are asked for a drive number, and *SuperDirectory* reads the directory of that disk. Because *SuperDirectory* includes a version of Multidos, it can read almost any DOS, single or double density.

Within a second or two after you enter the drive number, the screen displays the entire directory of the disk, showing the program names, and, after each, the number you chose for the disk, such as

COLGAM/SCR . . . 001G

Then you enter the rest of your disks into the computer, one after the other, occasionally stopping to save the file, using W to Write it to disk, at which time the program tells you exactly how many files are being written to disk. *SuperDirectory* has space for more than 1300 files in memory; the total number you have in memory is displayed at the top of the main menu.

If you have two or more disk drives, you can do a Load Directory from drive 1, 2, or 3 without any problem. If you want to use drive 0 for Load Directory, each disk from which you load the directory must have a Multidos system on it (version 1.4 or later).

Editing The Files

First you sort the files, which is extremely fast, by file, number, remark, or category. Examples of the first two are COLGAM/SCR and 001. Remarks can be added to any filespec to help find and identify certain files within your library. For example, if you want to locate all your chess games at once, you could add the remark CHESS to each. Using the category G as the optional fourth character for all game-disk numbers will place all games together on a sort by category.

To call up the screen editor, press X, and a cursor appears on the screen. You move it with the arrow keys, and put a marker on each filespec you want to delete, by hitting the Y key when the cursor is in front of the filespec. Whether you hit Y or N, the cursor then automatically moves to the next filespec, so flagging the entire file is quite fast; you can use the arrow keys to skip over groups of filespecs. Then all you do is hit ENTER, and D (for Delete), and all the flagged filespecs disappear immediately.

Or, in edit mode, you could hit R (for Remark) if you wanted to add a remark to any filespec, or E (for Edit) if you want to rename any files.

File Searching

You have two ways to look for a certain program or data file. You can use arrow and SHIFT keys to move the full li-

```
.........................MENU - 125 .........................
.                                                           .
.          <A>DD FILE              <N>EXT DISK              .
.          <C>ATEGORY              <P>RINTER                .
.          <D>ELETE FILE           <R>EMARKS                .
.          <E>DIT FILE             <S>ORT                   .
.          <F>IND STRING           <T>OP OF FILES           .
.          <G>RANS                 <W>RITE TO DISK          .
.          <H>ALF WAY              <X> SCREEN EDITOR        .
.          <L>OAD DIRECTORY        <ARROWS> SCROLLING       .
.          <M>ENU                  <*> EXIT TO DOS          .
.                                                           .
.....................SUPER DIRECTORY 3.0.....................
```

Figure 3. SuperDirectory's main menu offers 18 choices, for entering, editing, sorting, and searching the disk catalog.

brary up a line or a page at a time until you find what you are looking for. If you think what you are looking for is in the second half of the file, hit H to get you halfway through the library.

That is browse mode; you can go much faster with a direct search command, if you know exactly what you are looking for.

On the Main Menu, F (for Find String) permits searching for a specific file, disk number, a group of characters within a file, a category letter, or even a file extension such as CMD. *SuperDirectory* displays, on an END OF SEARCH screen, only the items that fit the search criteria.

Printing

If and when you want to print, you have the choice of three formats: one column with 25-character remarks; two columns with 20-character remarks; or three columns without remarks.

You also have the choice of printing a complete listing of your entire library, or from a selected file to the end of your library, or only the files shown on the screen. Or you can customize your printout.

Multidos forms commands are included, for setting line width, page length, printed text length, and blanks between blocks of printed text.

The *SuperDirectory* disk catalog program is highly recommended if you have a great many disks; it is comprehensive, very easy to use, and very fast.

Color Computer Cursor Control

Now you have four ways to control the cursor for Color Computer graphics. One is part of Extended Color Basic: the graphics commands CIRCLE, DRAW, and LINE, which the manual shows you how to use.

Second is the arrow keys, about which the manual says nothing, graphics-wise, other than providing their ASCII codes.

Third is the joystick, at $24.95 a pair, "for faster, more realistic action," as the catalog puts it.

Now there is a fourth way: the Color Mouse, "For the ultimate cursor control! Adds speed and ease to game playing and to creating color graphics" is what the 1984 Radio Shack catalog says, alongside the $49.95 price.

(There is also a fifth way, the Deluxe Joystick, which will be reviewed here at a later date.)

Color Mouse

The Color Mouse is a small black box, about the size of two and a half standard ice cubes. On top is a red rectangular Fire Button for making menu selections, firing missiles, or whatever.

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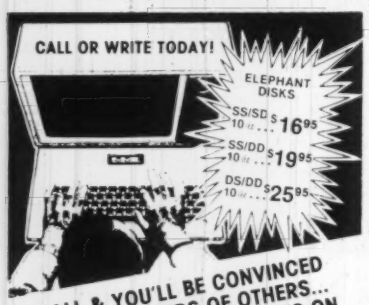

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TRS-80 Strings, continued...

At the bottom of the Color Mouse is a dime-size hole through which you can see a large steel ball, which protrudes through the hole about 3/32" when the Mouse is held belly-down. The ball isn't smooth, but has a glazed-looking surface, to provide traction.

According to the little five-page manual, the Color Mouse plugs into either joystick connector. Then you place it "on a flat plane (table top, desktop, or floor).... Put a sheet of paper between the flat surface and the Color Mouse to prevent marring of the flat surface." Actually, the surface would have to be quite soft—or you would have to press quite hard with the Mouse—to be damaged.

Now all you do is move the Mouse around, and the cursor moves: push the Mouse forward, and the cursor moves toward the top of the screen. A light touch is all you need; the ball is heavy enough to make firm contact with the paper. Also, the ball has enough vertical play within its case so you can't force the ball against the paper.

Maximum movement of the Mouse is 4.5 inches, both horizontally and vertically.

Using The Color Mouse

The Color Mouse isn't for everyone. It is not for fast, dynamic situations, such as for playing Radio Shack's *Doubleback* game, where you often have to move very quickly and very precisely.

For one thing, the Mouse provides no point of reference, so you don't know that much about where you are, unless you have just laid a track. With a joystick, you do have an idea where you are.

For example, using a joystick, you can make a line across the screen, vertically or horizontally, even with your eyes shut. (Well, not so great horizontally). Just whip the stick back and forth between 12 and 6 o'clock, or between 3 and 9.

But there is no "clock-dial" reference for the Color Mouse. So if you want to run a vertical line down the center of the screen, first you have to move the Mouse until the track shows the cursor is in the middle of the screen.

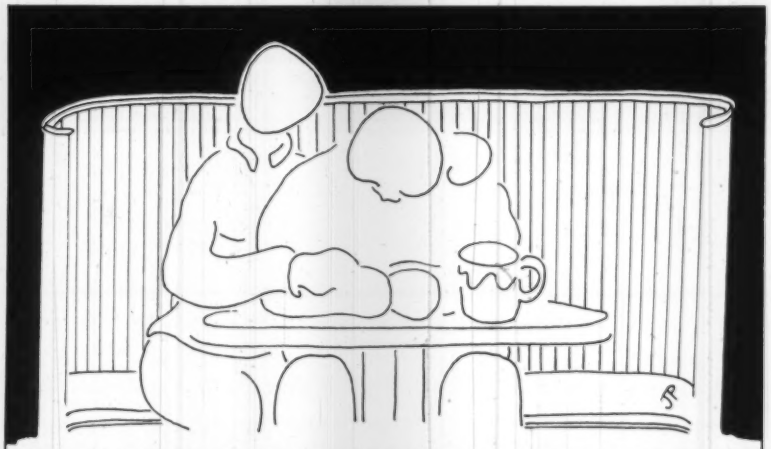
The best use for the Color Mouse is in static situations, where you want the tightest possible control of the cursor—mainly in graphics. For example, with a little practice, you can draw perfect concentric squares with the Mouse. You can't with a joystick, unless you are a robot and can thus move the stick absolutely straight.

For playing games, the joystick is still tops for cursor control. In *Doubleback*, using a joystick, you can easily make a loop the size of a quarter around an object, with a little practice, even if the object is in motion. To try that with a Mouse is to invite insanity or a heart attack; it just can't be done, because, for one thing, the cursor in *Doubleback* is always moving, laying a track.

OK, perhaps that is not a fair test. The Color Mouse manual recommends, "For a great example of how the Color Mouse makes your cursor control easier and more efficient, try the following TRS-80 Color Computer programs:

- *Galactic Attack*
- *Polaris*
- *Wildcatting*

In *Polaris*, the Mouse is a little easier to use than a joystick, to position the cursor precisely. However, *Polaris* is a relatively slow game. Also, you may



"You are not 'just another number'... think of yourself as a fixed-length, alphanumeric, character string."

have developed enough expertise with a joystick so you can position the cursor wherever you want, and hold it right there in position when you hit the fire button.

Galactic Attack is too fast-moving a game for the Mouse to be as effective as a joystick. Again, that is a personal judgment; perhaps once you develop some Mouse expertise, you might be able to handle it about as well as a joystick.

One advantage to a joystick is that you can hold it comfortably in your lap; the Mouse has to be on a flat surface.

The best way to judge the Color Mouse, of course, is to try it out at your local Radio Shack Computer Center or Computer Department. For some applications, it is a natural; for others, you may prefer a joystick.

Rainbow Magazine

Subtitled "The Color Computer Monthly Magazine," *Rainbow* devotes over 300 pages a month to the Color Computer, with two dozen feature articles, almost 20 departments, and reviews of 20-30 new products.

Two recent issues had articles on word games, the MC-10 versus CoCo (a summary of commands), a CoCo memory map, a program to generate TV-screen test patterns, reverse video, an adventure game, CoCo music (merging chords and tunes), computer literacy, Basic tutorials, etc. There's something for everybody: games, graphics, utilities, music, simulations, education, and science.

The emphasis is on software; many articles offer programs, and the pages are peppered with software reviews. Most of the ads are for software, along with some hardware, such as disk drives, printers, keyboard upgrades, lightpens, interface boards, slot extenders, voice and music synthesizers, and joysticks.

Most of the authors are enthusiastic and write well, and for the most part, the magazine is well edited and designed. The listings are unusually large and clear, and are all formatted for the 32-character screen. Also included are check numbers, to let you know if you have typed in the right number of characters.

Most of the programs featured in the articles, 20 to 30 a month, are available on cassette, at $6.50 each, $60 a year. A year's subscription to *Rainbow* is $22, from Falsoft Inc. Individual issues are $2.95 each.

Short Program 47:
The Ineradicable Name

From Houston, Bill Fronek sent this with a brief note, "Program prints name in middle of screen, one letter at a time, then erases it backwards and repeats."

```
100 CLS
110 INPUT "YOUR NAME "; A$
120 CLS
130 P=535
140 FOR A=P TO P+LEN(A$)
150 N=N+1
160 PRINT
   @A,MID$(A$,N,1);:NEXT
170 FOR A=LEN(A$) TO
   0 STEP -1
180 PRINT CHR$(8);
190 NEXT
200 N=0
210 GOTO 140
```

The program, written originally in two lines, uses function code 8 (backspace and erase current character), and string functions LEN and MID, to place a name (or phrase) on the screen, then erase it from right to left, and start all over again. (Note that after entering the name or phrase, you have to enter RUN.)

The name is stored as A$ by line 110. Line 130 picks a spot in the middle of the screen: location 535. Lines 140-160 put the letters of the name on the screen, one at a time, starting at screen location 535, for as many locations as LEN finds characters in string A$.

Then lines 170-190 reverse the operation of lines 140-160 by starting at the right end of string A$ (as determined by LEN), and erasing the name letter by letter, for as many letters as LEN finds in string A$.

Line 200 resets letter counter N to zero. Line 210 jumps the program back to line 140, to start it all over again.

The resulting display looks like someone (or something) is trying to erase a name that keeps reappearing on a magic blackboard.

The name or phrase can be put anywhere on the screen, by changing the screen location number P in line 130. To slow down the erasing speed, and thus change the effect, add an erase-delay line

```
185 FOR D=1 TO 10: NEXT D
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This explanation of how the program works is included because the program is rather simple, and of interest mainly to readers who are new to strings or to Basic. Keep the faith; there are more complicated short programs waiting in the wings. ■

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CIRCLE 135 ON READER SERVICE CARD

Inside Dreck

BY JOHN QWERTY

Insulting Editor

I just **blew in** from **Las Vegas**, and boy, is my **mouth tired.**

And talk about those **CES exhibitors**. Some of them are **so fat,** when they sit **around** the booth, they sit **around the booth.**

In the haughty realms of **professional microcomputer journalism,** within which I am undeniably a **cornerstone and Superstar,** those are known as **"joke openings."** Next week I may start off with **four,** or **even five,** if I feel like it. They sure help me **get this column done** within my **allotted twenty minutes.** Churning out this **swill** once a week isn't all **pâté de fois gras,** you know.

For instance, when I got out to **CES,** I couldn't find a **rent-a-car** anywhere. Then, leafing through the phone book in **desperation,** I came across a listing for a rental company called **Deal Lorean.** What a break that turned out to be. I ended up **tooling around at 90 all week** in an only **slightly-stained steel gull-wing gas guzzler.** With three **foxy blondes** constantly fawning over me in the car (all of whom by the way **worship the ground upon which I tread**), we made **quite a sight.** We sure sent those **jaywalkers** on Paradise **scurrying!**

Then we found a **suitcase full of money** and some **strange white powder** under the driver's seat. Vegas can be **lots of fun** if your **luck is running strong.**

But showgoing **isn't all fun and games,** you know. Sometimes you have to put up with **all sorts of abuse.** Take the party for **Elephonic Parts, (please).** The beluga caviar was really quite **scrumptious.** As is my habit, I pulled a chair **up to the buffet table itself,** preparing to **spend the evening there**—when I realized to my **utter horror and disbelief** that the **butter** on the **caviar toast** was **actually salted!** What **idiots!** These are the **kinds of things you have to put up with** in a job like mine.

Then there was the gala for **Leaking Sludge,** at the **Liberace Flaming-Sequins Palace and Funeral Home.** They had the **shameless audacity** to serve a **'72 Chateau-Neuf du Pape,** knowing **full well** that it would cause a **metallic undertaste** alongside the **veal marsala.** I'm sure they did it **on purpose.** Those people have a very **warped sense of humor.**

I did have the good fortune to run into my very good friend **Swami Nish Gru Lama Bernstein** at the **Leaking Sludge** party. I asked him for **yet another installment** of that vague, pretty much **worthless "I'm an insider" talk** that **turns me on** so much. "What about the **PC Junior?"** I asked him.

"Ah," he said, rewinding his turban. "I was hiding **in a trash receptacle** at the last **Junior strategy meeting,** hoping for some new insights. Suddenly a **barrage of crumpled balls of paper landed on my head,** and everybody **promptly left."**

Well **anyone who reads** this column (which by my accounting includes the **entire English-speaking world**) well knows **my feelings about IBM.** Here at *WimphoWorld,* **trashing IBM is a group sport,** and one of the **best ways we know of getting the magazine finished** in time to make our **dates on the racquetball court.** Well when I pressed Swami to talk, it turned out the **original Junior schematics** were what **landed in the garbage pail.** Swami said that IBM's **most current plan** is to **ship empty Junior boxes,** then claim that the units **were in fact sent out,** and any **customers who say different** are **attempting to pull a con job.**

What can you say about those **big blue knuckleheads?** I hope they **puke their guts out and die.**

Selling Myself Dept. Much as I **disdain plugging myself,** you should know that I have signed yet another **six-figure book deal**—this one with **Quick Draw-McGraw-Shill** Publications. This one is called **Qwerty's How to Pick Up Girls,** and I think it is my **best yet.** It includes, among other helpful hints, the **24-hour car rental/drug abuse hotline** number of Deal Lorean, and my **10 Surefire Ways to Build Confidence Even Without Any Legitimate Basis.**

Also keep an eye out for **Qwerty Sings Springsteen,** soon to be released on Epic Records. I am **currently negotiating** over the possibility of **doing a video or two** for the **hot cuts. ZZ-Top,** watch out. Qwerty is a **sharp-dressed man.**

Name-Dropping Dept. Steve Wozniak. Adam Osborne. Bill Gates. Dan Bricklin. Chuck Peddle. Gary Kildall. Trip Hawkins. Steve Jobs. John Anderson. Philip Estridge. James Morgan. Alan Kay. John Sculley. Clive Sinclair. That enough for you?

Off-the-Wall Compliment Dept. I wasn't too impressed by the **Coleco booth** at CES, but I must say, the **stunning nymphettes** doing demos there were without question the **pick of the litter.** They were wearing **lavender, skin-tight, undersized Danskins,** with **three-inch miniskirts** that **danced in the breeze.** And I'm glad to see that **Coleco is hiring more women.** If there's **one thing that irks me** about this industry, it's the **rampant sexism** that characterizes it.

Finally, more than a few people have written in to ask why I'm **so in love** with **boldface type** in all my columns. Well, my friends, **rest assured** that there is **no more effective way** to make **meaningless, nonsensical drivel** look like **significant and insightful journalism.** Without it, reading my column would feel **much like inflating a car tire with your teeth.**

And although **you know** and **I know** that my ramblings are **more often than not merely egotistical, self-serving gossip,** we also both know that **Inside Dreck** is the **first thing** you turn to in **each and every issue** of *WimphoWorld.* Dreck is surely **habit-forming**—take it from me.

Next week, more **name-dropping,** a look at the **full wine list** of the CES party scene, and some **inside chatter** from my good buddy, **Larry Flynt.** Should be fun. Catch you next time, and **drive carefully.** ●

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BY ROBERT MAUNDER

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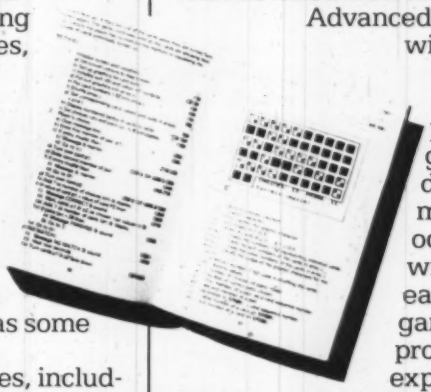

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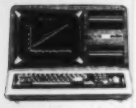

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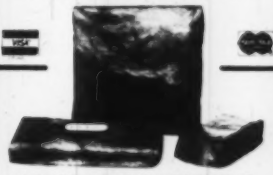

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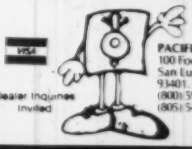

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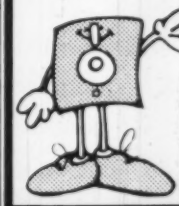

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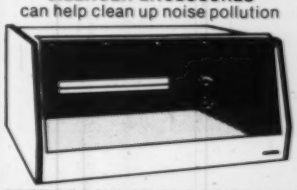

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Index To Advertisers

Reader Service No.	Advertiser	Page
101	Aardvark	203
105	Acorn	24, 25
102	Actrix Computer	17
212	Advanced Ideas	29
*	Alf	183
*	American Tourister	110
*	Apple	56, 57
106	Arktronics	11
107	BASF	83
104	Baudville	210
109	Beagle Brothers	60
110	Bible Research	202
*	Borland	1
111	BRS/After Dark	197
115	CBS	78, 79
112	Collins International	159
113	Commodore	217
117	Compuserve	51
118	Computer Discount Products	175
119	Computer Mail Order	178, 179
133	Computer Outlet	187
135	Computer Room	231
123	Computer Warehouse	185
294	Concorde Peripherals	100
246	Condor	90
126	Conroy La Point	96, 97
122	Continental Software	2
116	Cosmic	166
*	Counterpoint Software	13
225	CTRL-Health	213
227	Data Base Industries	186
129	Data Processing Educational Corp.	215
125	Data Products	84
131	Data Soft	36
132	Davka	183
228	Daybreak Software	221
120	Dennison Computer Products	9
121	Dennison Kybe	15
136	Designware	140
223	Digital Equipment Corp.	94
137	Discwasher	55
138	Doublestuff Software	223
139	E.A. Carey	207
140	Educational Media Assoc.	207
*	Electronic Arts	109
108	Electronic Specialists	185
134	Electronic Protection Devices	23
144	Epyx	117
145	Epyx	119
143	Epyx	121
*	Fastrack	230
141	Franklin	32
157	Gentech	155
159	Handic	219
183	Happy Hands	207
150	Hayes	87
153	Howard Sams	93
154	IBM	40, 41
156	IBM	104, 105
224	I.J.G.	143
149	Indus	149
202	Interactive Structures	193
158	Interstate Computer Bank	205
216	Kangaroo	215
170	Kensington	53
160	Knoware	58
161	Krell Software	77
163	Leading Edge	Cover 2
132	Leading Edge	Cover 4
222	The Learning Company	165
164	Lyco	188, 189
219	Meca	35
*	Memotech	99
167	Micro D/Abati	27
168	Micro Lab	21
169	Micro Management	213
171	Micro Sci	122
*	Micro Storehouse Co.	44
208	Monogram	31
221	Muse	65
172	NEBS	225
174	NEC	46
176	Nonagon	112
180	Okidata	195
211	Omega Microware	209
177	The Personal Computer Userfest	133
151	Perfect Data	144
179	Precision Data Products	185
175	Prometheus Products	130
181	Qantex	5
185	Quark	80
276	Quentin Research	171
155	Quinsept	202
186	Radio Shack	88,89
182	Readers Digest	71
188	Readers Digest	73
189	Readers Digest	75
184	Reston	106
192	Reston	127
148	Robert Flast	211
*	Rocky Mountain Business Software	205
187	RR Software	Cover 3
193	Satellite Software International	199
194	Southern Audio Video Electronics	211
195	Scholastic Wizware	68, 69
199	Screenplay	162
196	Software City	215
213	Southwestern Publishing	200
*	Spinnaker	19
197	Strategic Simulation	123
234	Sublogic	39
198	Sundex	134
305	SWP	191
200	Synapse Software	139
173	Tecmar	7
201	Terrapin	82
203	Transtar	125
204	TrippLite	202
207	Videx	76
214	Wholesale Technologies	42
209	World Almanac Publication	205
210	Xerox	67

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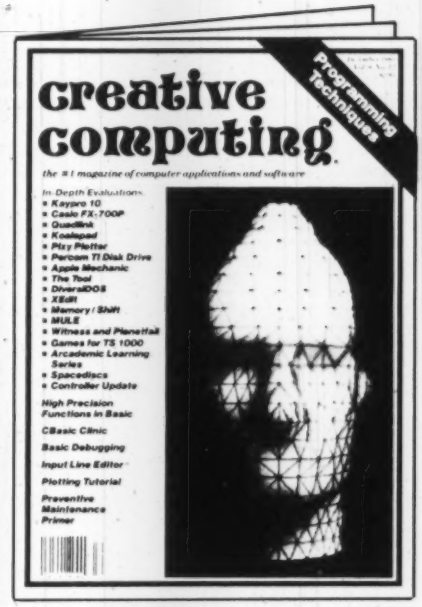

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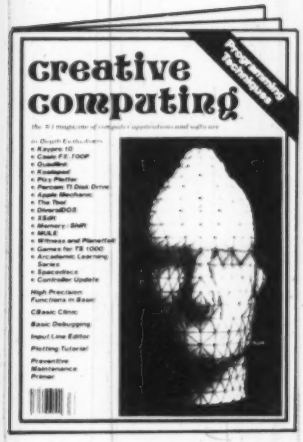

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126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150
151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175
176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225
226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250
251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275
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301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325
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376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400
401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425
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176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225
226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250
251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275
276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325
326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350
351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375
376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400
401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425
426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450
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176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
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276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325
326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350
351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375
376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400
401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425
426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450
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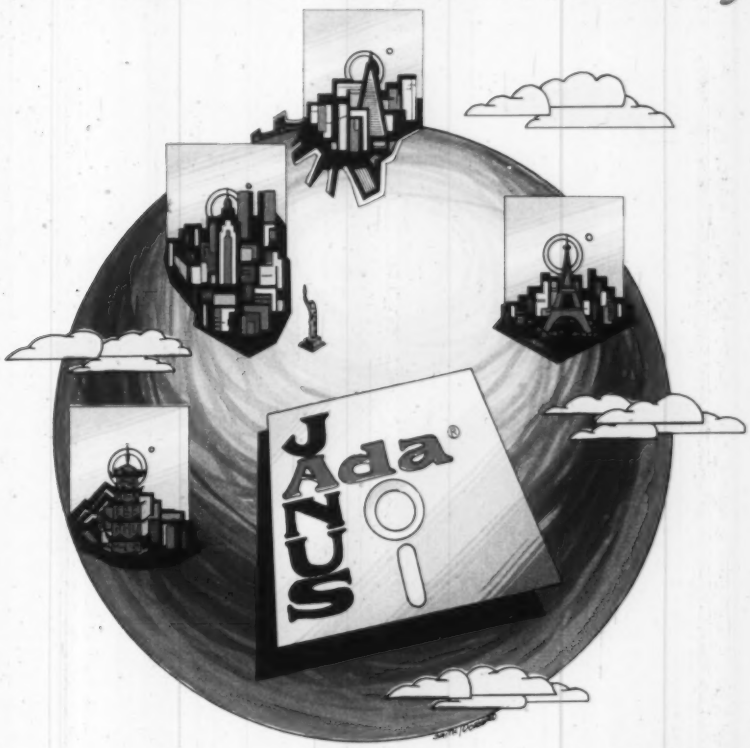

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